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UNIVERSITY OF ALBERTA

PREDICTIVE VALIDITY IN SCREENING NEED OF PUBLIC HEALTH NURSING HOME VISITS FOR MULTIPAROUS MOTHERS

BY

© ELUNED ANN SMITH

A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
MASTER OF HEALTH SERVICES ADMINISTRATION

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COMMUNITY MEDICINE

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SPRING, 1991

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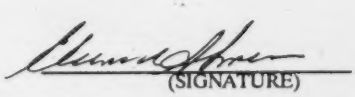

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AND COMMUNITY MEDICINE

The undersigned certify that they have read, and recommend to the Department of Health Services Administration and Community Medicine, for acceptance, a Thesis entitled Predictive Validity in Screening Need of Public Health Nursing Home Visits for Multiparous Mothers submitted by Eluned Ann Smith in partial fulfillment of the requirements for the degree of Master of Health Services Administration.

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Date Nov. 6 1990

ABSTRACT

Public health nurses in Alberta have traditionally provided support and information to postpartum mothers following discharge from hospital. The purpose of this study was to determine if the postpartum multiparous mother's expressed concerns regarding physiological and psychosocial health problems could accurately predict the mother's true need for a public health nursing follow-up visit.

A content and face validated instrument, Maternal Concerns Assessment was administered to 346 eligible multiparous mothers, whose notification of live birth was received during July and August 1989, on a routine home visit by public health nurses employed by the Edmonton Board of Health. A parallel assessment was completed by the public health nurse after completion of the visit to formulate part of the criteria for judging the predictive validity of the mother's responses on the Maternal Concern Assessment. Sixty-seven subjects (randomly selected from the total sample) were contacted prior to the home visit and interviewed by randomly selected public health nurses to determine the confounding influence that the telephone interview (as opposed to a face to face interview) might have on the predictive validity of the developed instruments.

The findings from the discriminant analysis found that (1) the number of concerns mothers expressed, (2) the mothers' own decision as to the need or no need for a home

visit and (3) mothers taking medication were the three statistically significant variables which maximized the predictive powers of the equation. The consistencies in the findings between the total group and the telephone subgroup provided evidence that the tool could be used on the telephone.

The telephone instrument for predicting the need of public health nursing intervention should be introduced for those eligible multiparous mothers by public health nursing agencies to provide a consistent standard for decision making. The implementation of such measures requires further research to evaluate the effects resulting from modification of the current program.

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Chapter 1

Introduction

Public health nurses in Alberta have traditionally provided support and information to postpartum mothers following discharge from hospital. The economic realities within the health care system are pressuring public health administrators to examine current programs. As well, public health nurses, facing time constraints, often set their own priorities as to the programs delivered within their assigned districts. However, decisions made by management or by the individual nurse to eliminate or reduce services should be based on reasonable estimates of the potential effect of such action.

Recently, a trend has developed for nurses to assess the health of the mother and infant by telephone. The outcome of the telephone conversation determines if the mother receives a home visit to assist the mother with her concerns and help with her parenting. The telephone appraisal is used more frequently with the mother who has more than one child. Rovers (1986) stressed that since each parent has different needs, one cannot conclude that the multiparous mother does not require follow-up. Due to the lack of validated criteria for decision making, each nurse must use her own judgement. Brodish et al (1987) supported the need for developing predictors to determine who requires follow-up since

resources are not readily available for universal visits. The development of a tool for the nurse to use in assessing the capability and functioning level of the mother has the potential to provide a consistent and high standard for decision making.

A telephone survey instrument, which can measure criteria which will predict accurately the need or lack of need for a public health nursing home visit to postpartum multiparous mothers and their infants, would improve the process of decision making for public health nurses. By identifying those mothers who need a home visit, public health nursing services could be directed towards the population most in need of nursing intervention.

Purpose of the Study

This study proposed to determine if the postpartum mother's expressed concerns regarding the physiological and psychosocial health problems (that are most frequently cited in the medical and nursing literature) can accurately predict the mother's true need for a public health nursing follow-up visit. To accomplish this overall goal the following specific research goals were also set.

Sub-objectives

1. To determine if the concerns expressed by the mother on the home visit were in agreement with the assessment made by the visiting public health nurses.

2. To determine if the recorded concerns and needs expressed by a subsample of multiparous mothers bytelephone were consistent with (a) the home visit assessments made by a visiting public health nurse, and (b) those made by the mother during the home visit.

3. To determine if a third party (a public health nurse) who only reviewed the concerns expressed by the mother on the telephone classified the need for a home visit vis-à-vis the criteria.

Definitions:

Maternal Health Concerns: A physical difficulty, a cognitive problem, or an anxious feeling related to the health of the mother or infant identified by the mother.

Nursing Assessment of Concern: For the purpose of this project, the operative definition of the public health nursing assessment of "No Concern" will be considered to be "as being within the normal limits according to the Edmonton Board of Health, Nursing Division Guidelines", while "Concern" will be defined as "there is a health problem or additional information is required for that topic".

Assumptions and Inclusion Criteria:

The generalizability of the validity of this study was limited to English speaking multiparas whose infants had not been admitted to NICU or referred by the Hospital Liaison Nurse. The results of this study will not be applicable to

primipara mothers (whose concerns and needs may be different). At this time, per Edmonton Board of Health policy, all primiparas require a home visit.

In order to determine the predictive validity of a developed questionnaire, a criterion measure for true need of a home visit was needed. In this investigation, "true need" was defined in reference to the judgement of the visiting public health nurse after completing the home visit with a particular multiparous mother. The justifying rational for this operational definition assumption was as follows. Public health nurses typically use Edmonton Board of Health guidelines to make professional judgements about the health status of individual postpartum mothers and their infants. After extensively reviewing the literature, Paton and Yacoub (1987) concluded that nursing judgment combined with Edmonton Board of Health guidelines were indeed the best measures for those who require extra services. Given that there was no other existing, validated criterion of "true need", such judgements appeared not only practical but also inherently face valid. It was recognized that from a construct validity perspective, the question remained whether such a criterion was truly a measure of need or some other construct such as demand, expectation, or desire etc. For this study, however, it was assumed that the public health nurse who had conducted a home visit had accurately used the Edmonton Board of Health

Guidelines correctly to classify whether or not the mother had needed the particular home visit.

Chapter 2

Review of the Literature

Since the purpose of this study was to develop an instrument which would be predictive of the need for public health nursing visit to the postpartum mother, the literature related to the role of nursing intervention during the postpartum period has been included in this chapter. When appropriate and applicable, some literature pertaining to instrument development and validation has been also included.

Postpartum: A Period of Adjustment

The nursing literature stressed that the mother undergoes considerable adjustment during the postpartum period. The first six weeks is a crucial time for the mother due to physiological changes and to the psychosocial adaptation to her new role (Affonso, 1987; Ball, 1987; Bull and Lawrence, 1985; Gruis, 1977; Hampson, 1989; Ludington-Hoe, 1977). As the mother adjusts to her new role, she goes through a transitional period which usually occurs when the mother is out of hospital (Rubin, 1961; 1975). The first child usually produces the most severe adjustment; however, each additional child changes the demands on the mother. Ethnic, cultural and socioeconomic factors also strongly influence the transitional period (Jennings and Edmundson, 1980). Brouse, (1988), Donaldson (1977) and Jennings and

Edmundson (1980) contended that the adjustment period is tantamount to a fourth trimester and that the complexity of this period requires professional assistance for the mother. Affonso (1987) promoted the role of public health nurses in assisting mothers with their postpartum adaptation. This position was strongly supported by Guise (1977) who stressed that all mothers must be offered a public health referral regardless if any problems are apparent.

Effectiveness of Public Health Nursing Home Visits

Either telephone contact or a home visit is considered to be of value for the mother (Donaldson, 1977; Hampson, 1989; Houston and Fields, 1988; Jennings and Edmundson, 1980). Some authors have argued that home visits must be available for those mothers who need further assistance with developing knowledge on child care and with their psychosocial adaptation (Affonso, 1987; Brodish et al, 1987). However, a review of current nursing research on the effect of public health nursing home visits by Combs-Orme (1985) revealed that research had not found home visits to be effective. Combs-Orme et al suggested that problems with internal validity were inherent in these studies rendering the findings suspect. These authors felt that more rigorous methodologies would have demonstrated a stronger effect. Hampson (1989) supported this position and stressed the importance of correcting these methodological flaws to

provide scientific evidence supporting public health nursing intervention. The research by Stanwick et al (1982) in Quebec was a prime example of the problems intrinsic in research in public health nursing home visits. Among primiparous mothers the authors found a statistically significant positive effect on those who were home visited when compared to the primiparous mothers who were not visited; however, no such differences were detected among compared multiparous mothers. However, the groups in these comparisons were not composed by randomization. Further, among the 80 assigned to the experimental group (home visit), 39 were not actually visited, thereby creating a large degree of experimental mortality. With a sample size of only 49 in the experimental group and 107 in the control group, statistical power was also inadequate for detecting a small effect size (Cohen, 1976).

Public Health Nursing Role as a Resource

The literature provided strong evidence that resources in the community are essential for mothers requiring support and assistance. Elmer and Maloni's (1988) assessment of a telephone consultation service which was intended to provide support to parents in Pittsburgh determined that the types of telephone calls requesting information demonstrated that parents lacked knowledge of infant care. Although this project used volunteers who were not all nurses, the results

indicated parents require support and help. Brescoe (1989) claimed that mothers are reluctant to seek help for emotional difficulties and that since health visitors initiate contact with mothers, the health visitor (the public health nurse equivalent in the United Kingdom) plays an essential role in identifying problems early. Schulz and Koerner (1987) supported the view that the public health nurse is the most appropriate professional to actively be involved in Maternal-Child health services. Not only do mothers look to nurses for information (Bishop, 1976) but the nurse shifts the emphasis from an illness orientated service to that of developmental assessment and a preventative approach (Schulz and Koerner, 1989). In contrast, the Harrison and Hicks (1983) study found that mothers did not consider the nurse to be a resource for the mother's own health problems. Harrison and Hicks postulated that this was possibly due to an insufficient emphasis on the assistance that the nurse could provide in relation to the mother's health. The opinion that postpartum mothers receive insufficient attention to their own personal needs from nurses was corroborated by Affonso (1987). Affonso stressed that the public health nurse can help the mother with knowledge and with adaptation to her own expectations, feelings, beliefs and attitudes. Brown and Hurlock (1977) encouraged the use of nurses to provide maternal support.

Maternal Concerns

Research related to maternal concerns is fairly consistent in identifying the types of concerns that postpartum women have. According to Dysert (1984), mothers often indicated a lack of resources and support as a major concern. Ball (1987) found that the social support received influenced the mother's well being. The strain of additional responsibilities impacts on the development of the relationship between mother and baby (Pridham, 1982). Other authors asserted that the primipara and the multipara both express concerns related to infant care (Greenberg et al; Gruis, 1977). Brodish et al (1987) indicated that 95% of subjects required some encouragement and follow-up, and although the number of multiparous mothers were small (25), 33% had special needs. Sumner and Fritsch (1977) found that 25% of the multiparas surveyed contacted the health centre for advice and information. The research done by Rover (1986) determined that a "real" concern for some mothers is a "minor" concern for others; therefore, Rover contended that any concern should be addressed. Harrison and Hicks' (1983) findings showed that the mother who had two or more children had fewer concerns than the first time mother but among all of these there was no difference in the number of major concerns they usually had.

The Current Status in Alberta

The percentage of multiparous mothers receiving home visits from public health nurses in Alberta is not readily available. A recent study by Houston and Fields (1988) of public health nursing practices found that only 58% of the public health nurses surveyed visited multiparous mothers. However, the Houston and Fields study was representative of only 37% of the Alberta public health nursing population and did not include Edmonton Board of Health employees, a feature which would have greatly influenced the reported findings. The Edmonton Board of Health, Nursing Division has attempted to visit all mothers regardless of parity. In 1989, there were 10,463 live birth notices received at the health centre of which 6,240 were multiparas. According to the 1989 ACNAR (Alberta Community Health Nursing Activity Recording) report, the public health nurses visited 83 % of the total number of newborns. (This figure may not be totally accurate due to recording and tabulation errors that reportedly occurred in one health centre, and no available documentation exists to indicate the reasons for the 17% nonvisitations).

Criteria Development

The development of criteria for predicting accurately which multiparous mothers need home visits would free nursing time that could be channelled to other preventative programs. Brodish et al (1987) and Larson et al (1987) claimed that

predictors can be developed to determine those individuals most in need of follow-up. Brodish et al (1987) utilized the Smilkstein Family and/or Friends APGAR questionnaire on 65 postpartum mothers in hospital and administered another telephone questionnaire with 4 open ended questions 7 to 10 days postpartum. The Family APGAR instrument (Smilkstein et al, 1982) measured only family function and social support; thus, the Brodish et al study omitted potentially significant variables by not including any maternal or infant health factors which may or may not be also important predictors for identifying true need of follow-up. While Dysert (1984) asserted her instrument for assessing maternal concerns of the primiparous mother was a reliable tool for identifying maternal concerns, her research included only 37 primiparous mothers sampled from private obstetrical practices in a metropolitan area. Both the sample size and the convenience sampling methods used by Brodish et al and by Dysert theoretically limited the practical strength of their instruments without further testing of their instruments.

Mosier (1966) cautioned the researcher to consider the following issues when establishing validity of an instrument. (1) The questions must appear at face value to be practical and applicable to the topic or situational conditions. (2) Care must be taken not to assume validity if the instrument only appears to be such without an examination of statistical evidence. (3) The sample of questions must be

representative of the universe of items which are applicable to measure the subject area. (4) The researcher must remember that the derived validity levels of the measure apply only to those population which were represented in the sample on which the questions were validated.

Summary and Conclusions

The complexity of the transitional period that the postpartum mother faces following the birth of a baby is well documented in the nursing literature. The authors are in agreement that mothers experience a variety of concerns which contribute to the degree to which they adjust to their new role.

With regards to the effect that public health nursing has on handling these concerns, there are major gaps in the nursing literature. Frequently the research has involved a small sample size often derived by a convenience sampling method. These problems are further compounded by the fact that small study samples have insufficient power to demonstrate any clear results as to the effectiveness of interventions. There is a distinct void in research pertaining to Canadian public health nursing programs. The public health nursing services provided in most Canadian provinces are not comparable to the services rendered in the United States.

Independent of geographic local, it is apparent that there is still need for the development of criteria to correctly identify mothers who would need and or benefit from public health nursing follow-up.

Chapter 3

Methodology

Introduction

The methodology employed in this project was designed to develop a validated instrument which could be used to predict which postpartum multiparous mothers need or do not need a home visit by a public health nurse following discharge of the mother and infant from the hospital.

This chapter provides a detailed discussion of the study's sampling technique, the instruments used, the procedural steps utilized in data collection, and the method of analyzing the data.

Sample

The study sample included all eligible multiparous mothers whose notification of live birth was received by the Edmonton Board of Health during July and August 1989. This length of time yielded an approximate sample size of 350, the number required to meet the criteria of a 95% confidence level at a plus or minus 5% sampling error and an estimated population proportion of 33.3% needing home visits. The estimated proportion was based on the research by Brodish et al (1987) who found that 33% of the multiparous mothers in their study had special needs. Also, the Sumner and Fritsch (1977) findings provided some support for this estimate.

All subjects who did not have a comprehension of the English language were ineligible. Also, multiparous mothers who were referred to the health centres by either the Neonatal Intensive Care Units or by the Hospital Liaison Nurses were excluded (as such subjects would continue to require home visits as per Edmonton Board of Health policy).

Within the above sample of 350, a subsample of the size of 70 (20%) was randomly selected. This subsample was used to undertake additional analyses determining the confounding influence that the telephone interview (as opposed to a face to face interview) might have on the predictive validity of the developed instrument. (Telephone calls to the entire sample of 350 subjects would have demanded an excessive time involvement by the participating public health nurses and such involvement was not deemed feasible with the current budget constraints). For the study purposes, 70 subjects (or 20% of the main sample) was the practical number of subjects that could be accommodated by the participating agency.

Instruments

The questions developed for the Maternal Concerns Assessment (MCA) instrument (Appendix A) were based exclusively on the current literature and the guidelines of the Edmonton Board of Health included in "Nursing Division Recording Manual". The developed MCA was also content validated by a panel of experts comprised of a

multidisciplinary group of professionals which included physicians, nurses and a social worker: at least 80% of each professional subgroup had to consider each item necessary for inclusion before the item was finally considered for retention). Face validity was also established (via telephone interview of 30 multiparous mothers by the investigator) and by ten experienced public health nurses who critiqued the instrument for clarity and relevance of the content valid items. Provided that the participating subjects were open and honest in their responses, 100% of the multiparas interviewed responded that the questions were clear and that they were comfortable with responding to all questions. Over 90% of the subjects rated all but one item as being relevant and this item was removed from the questionnaire.

The final questionnaire utilized both closed and open responses. The closed ended items had associated potential advantages of coding, ease of statistical analyses and administration; open ended items supplemented the above by enabling the mother to add her own concerns and/or allow her to clarify the responses made to each closed ended item, thereby facilitating comprehensiveness and face validity.

A parallel form (Appendix B), the Public Health Assessment (PHA) was developed for the public health nurse to record her own professional assessments as to whether or not the mother's concerns required the attention of the visiting

public health nurse (i.e., these formed part of the criteria for judging the predictive validity of the mother's responses on the Maternal Concern Assessment). Both the MCA and PCA forms included a final item related to whether or not the mother wanted or needed a home visit.

Data Collection

Various biographic and demographic measures were collected and related to the criterion of the visiting public health nurses judgement (i.e., the true need of the mother for a home visit). The nature and purpose of these measures follow. In order to facilitate the clarity of the discussion, the reader is referred to Figure 1 which schematically outlines the order in which these various measures were taken.

Since participation of the total public health nursing staff in Edmonton was required in order to obtain 350 subjects, during the summer of 1989, all of the public health nurses were trained in the use of the questionnaires. This investigator provided the training at each regional health centre. The protocol which was to be followed is described in Appendix C.

The steps taken to administer the questionnaires to the 350 subjects were as follows. First each health centre received copies of the Maternal Concern Assessment (MCA), Public Health Assessment (PHA) and maternal consents

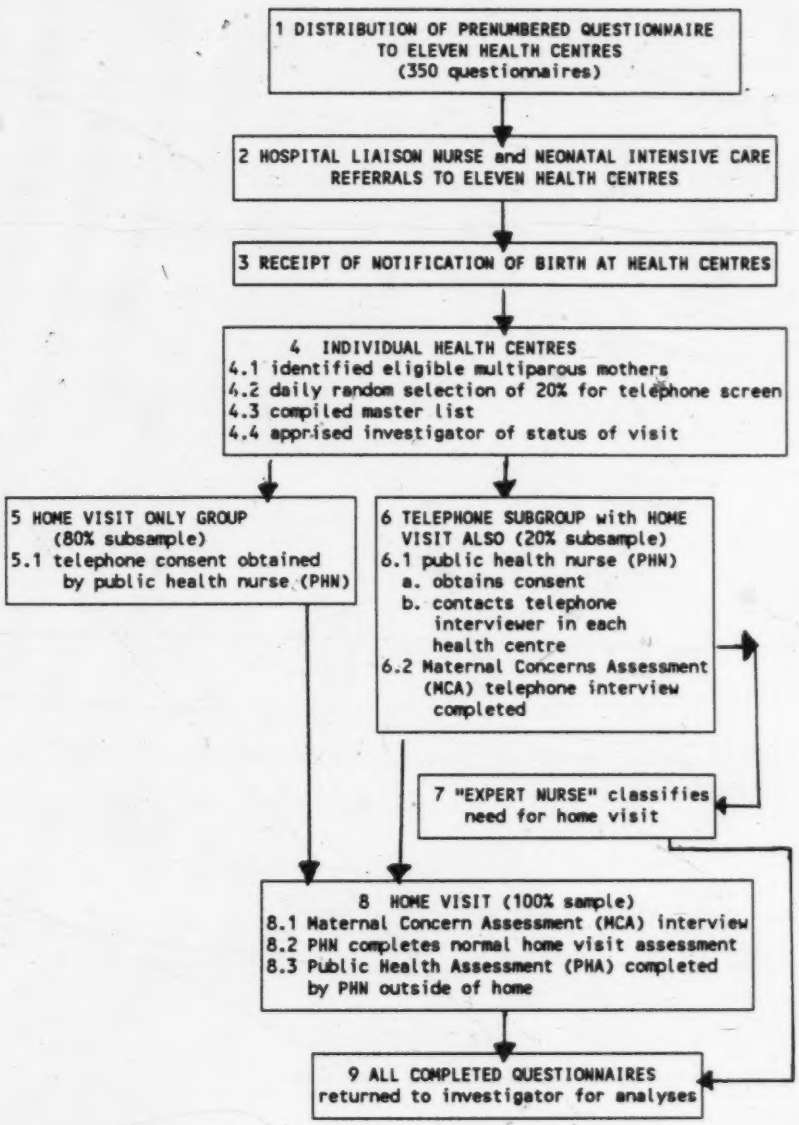
(Appendix D); each form of this set was assigned a common identification number. The number of questionnaires and consents assigned to each health centre was predetermined by establishing an estimated proportion of births based on the reported multiparous birth rate in each of the eleven health centres. To ensure achievement of the first 350 eligible multiparous subjects the investigator maintained a twice weekly contact with each health centre during the study period. (Redistribution of the questionnaires was undertaken at the one health centre which had not received the estimated number of births during the study period).

The hospital liaison nurses identified which obstetrical patients required follow-up according to the NICU and their own recommendation (Figure 1, step 2). Following delivery of the Notification of Birth by the routine courier system to each health centre (step 3), the regional supervisor or her delegate determined subject exclusion and inclusion (based on the referrals and the Notifications of Birth (step 4.1)).

For those eligible subjects a copy of the MCA, PHA and a consent were then attached to the Notification of Birth in preparation for the assignment of the home visit. The supervisor or her delegate also randomly determined which one in every five would be contacted by a telephone interviewer (a public health nurse randomly selected at each health centre). All telephone interviews were undertaken prior to the home visit (step 4.2).

FIGURE 1

DESIGN OF STUDY


1 DISTRIBUTION OF PRENUMBERED QUESTIONNAIRE TO ELEVEN HEALTH CENTRES (350 questionnaires)
2 HOSPITAL LIAISON NURSE and NEONATAL INTENSIVE CARE REFERRALS TO ELEVEN HEALTH CENTRES
3 RECEIPT OF NOTIFICATION OF BIRTH AT HEALTH CENTRES
4 INDIVIDUAL HEALTH CENTRES
4.1 identified eligible multiparous mothers
4.2 daily random selection of 20% for telephone screen
4.3 compiled master list
4.4 apprised investigator of status of visit
5 HOME VISIT ONLY GROUP (80% subsample)
5.1 telephone consent obtained by public health nurse (PHN)
6 TELEPHONE SUBGROUP with HOME VISIT ALSO (20% subsample)
6.1 public health nurse (PHN)
a. obtains consent
b. contacts telephone interviewer in each health centre
6.2 Maternal Concerns Assessment (MCA) telephone interview completed
7 "EXPERT NURSE" classifies need for home visit
8 HOME VISIT (100% sample)
8.1 Maternal Concern Assessment (MCA) interview
8.2 PHN completes normal home visit assessment
8.3 Public Health Assessment (PHA) completed by PHN outside of home
9 ALL COMPLETED QUESTIONNAIRES returned to investigator for analyses

For these latter cases a second copy of the MCA was provided to the telephone interviewer (with the common identifying number affixed). The regional supervisor or her designate maintained a master list of all subjects names and distributed the notifications (step 4.3). This investigator was continually informed about the progress of distribution of the visits (step 4.4).

At the time the public health nurse contacted the subject to arrange the home visit (steps 5.1 and 6.1), the mothers were informed about the project and a telephone consent obtained. Following this initial contact, the public health nurse notified the telephone interviewer regarding her scheduled home visit thereby alerting the telephone interviewer to undertake the telephone interview prior to the visit date (step 6.2).

To reduce the chance of changes in the health status between the telephone contact and the home visit and to ensure that any concern expressed on the telephone was promptly addressed, the telephone interview was conducted within a time limit of 8 hours prior to the home visit. If this time constraint was not met for any subject, the subject was replaced by random selection.

All eligible subjects received a home visit by a public health nurse and were also interviewed using the MCA (step 8). All responses made by the mother were recorded by the nurse. The PHA, including the nurse's assessment of whether

or not a home visit was actually needed was completed immediately following the home visit, but outside the home.

Since the telephone interviewer (a randomly selected public health nurse in each health centre) was not necessarily expert in judging the need for a home visit based on the telephoned responses, this study also utilized an experienced public health nurse (a so called "Nurse Expert") to independently review the telephone responses. This expert recorded her assessment as to whether or not a visit was needed (step 7). These other data enabled comparisons between visiting public health nurses and the expert as to whether or not an expert working with data extracted by telephone could match the operational criteria of true need.

Analysis of the Data

To determine the predictive validity of the measurements taken the following statistical analyses were utilized.

It can be argued that the classification by the home visiting nurse for visit or no visit theoretically represents an underlying continuum of need. However if screening were implemented in practice, the issue would not be "need", but visit per se (i.e., visit or do not visit). As such the model of choice was regarded to be discriminant analysis since interest was in assigning observations to one of two categories, i.e., "need" and "no need" for a home visit. The discriminant model also enables the maximizing predictability

with the least necessary information (i.e., it was possible that not all 32 items were important in terms of their predictive strength of visit needed or not needed).

To handle so-called missing data for large groups, discriminant solutions excluded pertinent items (for example, items pertaining to caesarian section, circumcision and the open ended question "How have things been for you since you have been home from hospital?"). For those subjects who had a caesarian section and for those whose infants were circumcised separate discriminant solutions were computed and analyzed. For those mothers who commented on the open ended question, responses were content analyzed and rated: 1) coping, doing fine; 2) some problem but adjusting; 3) experiencing difficulty. Such ratings were completed by the investigator and an experienced public health nurse to check for reliability (attaining a 93% agreement level). Given this acceptable degree of consistency, the public health nurse's ratings were then also analyzed to determine if the open ended responses indicated any apparent pattern for "need" or "no need" of a home visit.

In addition to the 32 specific items of the MCA or PHA questionnaire, eight additional variables were created for analysis: i.e., feeding (sum of the ratings assigned to each response of "no concern", "concern" and "very concerned" for breast and bottle feeding); number of concerns (the frequency count of the number of items rated as "concerned" or "very

concerned"); mother's health (the frequency count of the items related to the mother's own health rated as "concerned" or "very concerned"); infant's health (the frequency count of items related to the infant's health rated as "concern" or "very concerned"); family relationships (the frequency count of items related to family relationships rated as "concern" or "very concerned"). Similar subscales were created for the degree of concern regarding the mother's health, degree of concern regarding the infant's health and the degree of concern regarding the family relationships. With these last subscales, the scale was developed by rating the total composite degree of concern (the sum of "no concern", or "concern" or "very concerned") for each of the three groupings for all of the items within; whereas, the total number of items was derived by totalling each item for which a concern was expressed regardless of the degree of that expressed concern (or the total expressed regardless if the rating was "concern" or "very concerned").

Based on the discriminant solutions for predicted visit and no visit, the sensitivity, specificity and positive and negative predictive values were also compiled.

The above analyses were repeated in the subgroup of 70 (which were also surveyed by telephone). As the statistical power for this subgroup was substantially less than the whole sample, the principle goal of these subgroup analyses was to

determine consistency in the trends observed for the whole sample:

1. consistency in identifying the same concerns as the public health nurse observed on the home visit (i.e., reliability);
2. consistency in producing similar clusters of home visit and no home visit subjects (i.e., predictive validation);
3. consistency in identifying similar items which are most influential on or predictive of home visit (i.e., construct validation);
4. consistency in reproducing results in a randomly selected subsample of 20% (i.e., generalizability).

Finally, to provide further insight into the distribution patterns of those criteria that were estimated to be predictive of visit need, various crosstabulations were performed. As will be seen in chapter four, these types of analyses provided some additional information regarding the pattern and nature of the differences.

Ethics

A telephone consent was obtained (Appendix D2). The mother was advised about the time commitment and that the concerns addressed were those common to postpartum mothers. The mother was informed that she could at any time terminate her involvement in these various interviews and that this

action would not influence further care or services she would receive. Finally, throughout this study, the subjects received the routine follow-up that all other mothers receive.

Chapter 4

Data Analyses

Introduction

This study was designed to determine if the items included in the MCA (Maternal Concern Assessment) could be administered by a public health nurse and in so doing, accurately predict the "true need" for a home visit to a postpartum multiparous mother. The public health nurse's decision on whether or not a visit was needed was the criterion of "true need".

Description of the Sample

The sample group was derived from all the Notifications of Birth received at the eleven health centres during the study period. During the study time period, 44% of 1008 birth notices received were eligible for inclusion in the study (Table I).

TABLE 1

DERIVATION OF SAMPLE

Total Number of Births July-August, 1989:	1008
Number of Eligible Subjects:	442(44%)
Number of Eligible Subjects Who Refused:	36
Number of Eligible Subjects Excluded for known reasons[1]:	60
Number of Eligible Subjects Studied:	346

[1] see page 33 for cited reasons

Of the total 1008 Notifications of Birth received, 56% were ineligible based on the already noted criteria (i.e., only a multipara with a comprehension of English who had not been referred to the health centre by the NICU or hospital liaison nurse were eligible for study). Among the 442 apparently eligible subjects, 36 mothers declined to participate and 60 mothers could not be located, had moved, or the mother had problems which needed immediate attention on the telephone. An additional four subjects were deleted from the study due to incomplete questionnaires.

A summary of the characteristics of the studied sample is presented in Table 2. The number of days from the time of birth until the mother received a contact from the public health nurse ranged from 6 to 52 days. Almost ninety-five percent of the mothers were 35 years or younger with 3 mothers under 19 years of age and one mother over 40 years of age. The largest percentage of mothers were in the 26 to 30 age group. The ages of the other children ranged from 1 year of age to 18 years with 70% of the youngest siblings being 1 to 3 years and 21% being 4 to 6 years of age. Ninety-three percent of the mothers had previously been visited by a public health nurse. Ninety-three percent of the subjects had less than three children with the majority (76.9%) of the children in the three or less years age grouping.

TABLE 2

CHARACTERISTICS OF THE SAMPLE
(n=346)

	NUMBER	PERCENTAGE of SAMPLE
DAYS POSTPARTUM:		
10 days or less	57	16.5%
11 to 20 days	234	67.6%
over 20 days	55	15.9%
AGE OF MOTHER:		
19 and under	3	0.9%
20 to 25 years	76	21.9%
26 to 30 years	145	41.9%
31 to 35 years	103	29.8%
36 to 40 years	18	5.2%
over 40	1	0.3%
NUMBER OF OTHER CHILDREN:		
1	223	64.5%
2	100	28.9%
3	18	5.2%
4 and over	5	1.4%
AGES OF OTHER CHILDREN:		
1 to 3	266	76.9% *
4 to 6	134	38.7% *
7 and over	100	28.9% *
PREVIOUS VISIT FROM A PUBLIC HEALTH NURSE:		
yes	322	93.1%
no	24	6.9%

* Percentage of subjects cannot sum to 100% since some mothers had 3 or more children crossing noted age groupings.

Subsample:

Of the randomly selected subsample (20% of the study), 67 of the 70 subjects were available for analyses. Sixty-nine questionnaires were returned but 2 were eliminated due being incomplete. In terms of the five variables noted in Table 2, the characteristics of the subsample was statistically equivalent (Goodness of Fit tests utilizing α

level of .05) when compared to the sample from which it was drawn.

Characteristics of Participating Public Health Nurses

All of the public health nurses who were assigned postnatal visits during the data collection period of July and August 1989 participated in the study. The educational background of the public health nurses was not considered to be a significant factor since the educational level of all public health nurses employed by the Edmonton Board of Health is comparable given employment criteria. The Nursing Division of the EBH currently employs only nurses who have a baccalaureate degree in nursing. The few nurses still on staff who were employed before the undergraduate degree requirement was invoked, did have a postgraduate diploma in Public or Community Health (combined with extensive experience in public health nursing).

The participating public health nurse's experience level is shown in Table 3 on the following page. Sixty-three percent of the nurses had 5 or less years experience, while 24% had over 11 years experience.

Crosstabulations of the public health nursing decision on the need for the visit and the years of experience of the nurses involved were undertaken. The obtained frequency corresponded closely to the expected frequency that would occur for each grouping of years of experience. (χ^2 = 1.85,

3 D.F., $P \leq 0.61$). That is the decision made by the nurses in respect to the need for a visit did not systematically vary with the nurses' years of experience.

TABLE 3

EXPERIENCE LEVEL OF PARTICIPATING NURSES

YEARS	NUMBER	PERCENTAGE
Less than 2 years	119	34.4 %
2 to 5 years	100	28.9 %
5 to 10 years	43	12.4 %
over 10 years	84	24.3 %

Predictive Validity Estimates Involving Total Sample

Parallel Consistencies: Mother and Visiting Nurse

For each item in the MCA the public health nurses completed a parallel response on the PHA. The frequency of the mother's responses as either having a "concern" or being "very concerned" by the mothers for each item is compared to the frequency of the responses for "concern" or "very concern" made by the public health nurses per identical item (Table 4). Also outlined in Table 4 are the respective obtained Chi-square values. The Chi-square in a 3x3 table with nurses (no concern, concern and very concerned) and mothers (no concern, concern and very concern) provides some indication of the relationship that exists between the responses by the mother and the nurse for each of these parallel items.

TABLE 4

COMPARISON OF MOTHER'S RESPONSES TO NURSES RESPONSES (n=346)				
VARIABLES	**MOTHER** no. (%)	**NURSE** no. (%)	χ^2 (4 df)	**SIG.**
LOCHIA	65 (19%)	42 (12%)	139.98	p<.001
PERINEUM	44 (13%)	19 (5%)	68.65	p<.001
MOTHER BOWELS	60 (17%)	43 (12%)	174.00	p<.001
BREAST	67 (19%)	47 (13%)	117.66	p<.001
NUTRITION	70 (20%)	41 (12%)	90.65	p<.001
REST	108 (31%)	55 (16%)	128.90	p<.001
BREAST FEEDING	63 (18%)	35 (10%)	108.81	p<.001
BOTTLE FEEDING	51 (15%)	21 (6%)	55.93	p<.001
UMBILICAL CORD	106 (31%)	41 (12%)	61.23	p<.001
WET DIAPERS	12 (3%)	4 (1%)	56.57	p<.001
INFANT'S BOWELS	80 (23%)	30 (7%)	119.90	p<.001
INFANT'S SKIN	103 (30%)	71 (21%)	99.03	p<.001
SLEEPING/WAKING	70 (20%)	23 (7%)	103.95	p<.001
CRYING	27 (8%)	9 (3%)	119.85	p<.001
IMMUNIZATION	63 (18%)	20 (6%)	94.93	p<.001
EMOTIONAL CHANGES	58 (16%)	29 (8%)	81.03	p<.001
DEMANDS	103 (29%)	63 (18%)	76.32	p<.001
SIBLINGS	111 (32%)	54 (16%)	98.10	p<.001
HUSBAND'S SUPPORT	31 (9%)	29 (8%)	108.95	p<.001
FAMILY/FRIENDS	28 (8%)	30 (9%)	61.72	p<.001

An examination of Table 4 will reveal that more mothers tended to report concerns (either a "concern" or "very concerned") for any given item than did the visiting nurses. While the discrepancies were not always great (eg. wet,

diapers, husband's support, family/friends) several items had major discrepancies between the number of identified concerns (rest, umbilical cord, infant bowels, immunization, etc.). The nurses' generally viewed the more frequently cited concerns as less problematic. These differences were most pronounced with item topics often related to conditions that an expert care giver could only judge in terms of normalacy (eg., immunization, perineum).

As noted in Table 4, Chi square tests for the relationships of parallel items for the mother and the visiting nurse were statistically significant. Each parallel item demonstrated that the chi square value was significantly greater than the critical value for α 0.05 with 4 degrees of freedom indicating that the nursing rating of each item was not independent from the mothers rating of degree of concern per item . A comparison of expected frequencies in each cell with the obtained values indicated that the greatest differences appeared when both the mother and the nurse rated concern or very concern. However, this study chose to utilize the nurse's judgement as the criterion (assuming inherent expertise could distinguish between a mother's concern and her true need for help) and as such the nurses' decisions would need to utilize the information provided to her by the mother to formulate that decision.

The mother's responses to each item were used to predict the public health nurse's rating of need or no need of a home

visit. The first investigation of the data using the discriminant analysis model entered 37 variables simultaneously for all 346 subjects. The criterion, public health nursing decision, was entered into the equation by coding "visit" as "1" and "no visit" as 2. The variables caesarian, circumcision and open question were omitted. An overall correct classification of those needing and not needing a home visit was found to be 80.35% (Table 5). Out of the 168 that the public health nurses judged needing the visit, 139 (82.7%) were predicted as needing a visit and 29 (17.3%) as not needing a visit. Of the 178 cases that the nurses considered not needing a visit 39 (21.9%) were predicted as needing a visit and 139 (78.1 %) predicted as not requiring a visit.

TABLE 5

CLASSIFICATION RESULT TABLE
ALL VARIABLES

ACTUAL GROUP		Number of Cases	PREDICTED GROUP MEMBERSHIP "VISIT"	PREDICTED GROUP MEMBERSHIP "NO VISIT"
PUBLIC HEALTH NURSE	"VISIT"	168	139 (82.7%)	29 (17.3%)
	"NO VISIT"	178	39 (21.9%)	139 (78.1%)

The Wilks Lambda value of 0.61 and the χ^2, 36 df, value of 162.21 with a $p<.001$ demonstrated that the results were overall statistically significant.

To assess which of the 37 variables were statistically significant, a stepwise discriminant analysis was performed. While several analyses were undertaken to check for the presence of suppressor variables (i.e., by allowing the stepwise solution to proceed until significance tests with associated probability levels of .20 were not rejected), the optimal solution for maximizing predictability with minimal predictors included only three statistically significant (α level of 0.05) predictors (Table 6).

(1) The total number of concerns expressed by the mother (hereafter referred to as "Number of Concerns"): twenty-four percent (84) of the subjects had 0 to 1 concern, fifty-six percent (197) of the subjects had 2 to 6 concerns and nineteen percent (65) of the subjects had seven or more concerns; one mother had a total of 18 concerns and 30 mothers expressed no concerns at all.

(2) The mother's taking of medication ("Medication"): ninety three or 27% of the mothers were on medications of some form; the type of medication varied from Tylenol for continued discomfort to medications required for a more serious health problem; (although many mothers had referred to vitamin supplements as a medication, those mothers who had stated only vitamins as such were not considered to be on medication for the purpose of this study).

(3) The mother's own decision as to need or no need of a home visit (referred to as "Mother's Decision": one hundred and

eighty (52%) of the mothers stated that they felt they needed a home visit.

Both "Medication" and "Mothers Decision" were entered into the equation by coding which mothers who were on medication as category "1" and which mothers who felt that a visit was needed as category "1"; conversely both the mothers who were not on medication and the mothers who did not feel they needed a visit were categorically classified as "2". The means for the two groups categorized as "visit" and "no visit" on which the univariate tests were conducted are indicated in Table 6. As expected the "visit" group had the higher mean for the variable Number of Concerns, while the means for Mother's Decision and Medication demonstrated a slightly greater mean for the "no visit" group.

TABLE 6

UNIVARIATE F-RATIO WITH 1 AND 344 D.F. HOME VISIT INTERVIEW (n=346)				
VARIABLES	F-RATIO	SIG.	GROUP MEANS	
			VISIT	NO VISIT
NUMBER OF CONCERNS	59.9	0.000	5.28	2.83
MEDICATION	11.6	0.001	1.65	1.81
MOTHER'S DECISION	110.5	0.000	1.23	1.70

The standardized canonical discriminate function coefficients demonstrated that Mother's Decision for a visit or no visit had the largest weight when used in the equation, followed by Number of Concerns. If the mother rated a visit

as necessary, the visit was more likely to be classified as needed. Also, as the mother reported an increased number of concerns there would be a greater chance that the visit would be categorized as needed. Medication displayed a weaker position in strength within the equation (Table 7).

TABLE 7

CANONICAL DISCRIMINANT FUNCTION HOME VISIT INTERVIEW		
CHI-SQUARED 126.11 WITH 3 DF AND SIGNIFICANCE OF <0.001		
	DISCRIMINANT FUNCTION COEFFICIENTS	
	STANDARDIZED	UNSTANDARDIZED
NUMBER OF CONCERNS	- 0.47	- 0.16
MEDICATION	0.19	0.43
MOTHER'S DECISION	0.77	1.76
(CONSTANT)		-2.70

The correlations between these variables and the composite formed by using the weights demonstrated that Mother's Decision with a correlation of 0.85 exhibited a strong relationship as did the Number of Concerns displaying a negative relationship with a correlation of -0.63. The weaker positive correlation of 0.2[illegible] indicated that Medication did not have as strong a relationship as did the other two variables.

Assuming equal probability for group membership, visit or no visit, the classification table (Table 8) predicted the group membership; 188 mothers were predicted as requiring visits, while 158 subjects were predicted as not needing a

home visit. The overall percent accuracy for correctly classified was therefore 75.72%.

TABLE 8

CLASSIFICATION RESULT TABLE
VARIABLES - DIRECT ENTRY
(Mother's Decision, Medication, Number of Concerns)

ACTUAL GROUP		Number of Cases	PREDICTED GROUP MEMBERSHIP	
			"VISIT"	"NO VISIT"
PUBLIC HEALTH NURSE	"VISIT"	168	136 (81.0%)	32 (19.0%)
	"NO VISIT"	178	52 (29.2%)	126 (70.8%)
		TOTAL	188	158

If these predictors are to be used for determining which mothers are in need of a home visit, a priori, the user should consider the types of correct decisions and errors which will be made. The proportion of those subjects requiring home visits who were predicted as needing that home visit (sensitivity of the test) was 81%. The specificity or proportion of those who did not need a home visit and were predicted as not requiring such a visit was 71%. The proportion of predicted home visits that truly need a home visit (positive predictive value) was found to be 72%, while the negative predictive value was 80% (i.e., the proportion predicted as not needing a home visit which truly did not need a home visit).

Conversely, thirty-two mothers (9.2% of the total sample) were judged by the public health nurses as needing a home visit, but classified by discriminant solution as not needing the home visit. Further, assessment of the responses of these 32 cases indicated that 7 mothers (21% of those classified as false negative) even required further follow-up by the nurse. However, all 32 of these mothers had indicated that they felt they did not need a home visit. Finally the public health nurses recorded that 14 mothers of the 32 mothers had only one concern, the remaining 18 mothers had 2 to 6 concerns. The nurses rarely classified any mother as needing a home visit when few concerns were identified, thus these cases remained an exception. Possibly the nature of the mother's concerns or conditions influenced the nurse to take such exceptions: 4 subjects were new to the province; 2 infants had jaundice; 1 infant had a clubfoot; 3 infants had skin problems; 2 had umbilical cord concerns; 2 had circumcision concerns; 2 mothers had mastitis; 1 mother had cystitis; 2 mothers had heavy lochia; other reasons given by the nurses for the home visit requirement included lack of sleep and rest for the mother, insufficient support systems, need for safety/ family planning/ postpartum exercise information, family problems, adjustment of siblings, meeting the demands of the household, family and new baby, single mother on social assistance and a history of SIDS (Sudden Infant Death Syndrome) in the family. In two cases the

responses provided by the mother were not congruent with the assessment made by the nurse for the questionnaire. One of these two subjects appeared slightly depressed according to judgement of the public health nurse and was reluctant to ask questions. The public health nurse who assessed the second mother concluded that this particular mother had an apparent lack of knowledge regarding child care and limited parenting skills.

Analysis of Subjects with Incomplete Data

Separate discriminate analyses were computed on those subjects (1) who had caesarian sections; (2) whose infants had circumcisions; and (3) who had responded to the open ended question "How have things been for you since you have been home from hospital?". For all three categories of subjects a simultaneous direct-entry of the three variables, Mother's Decision, Number of Concerns and Medication was undertaken.

The findings of the analysis on the 49 mothers who had caesarian sections are displayed in Table 9. The findings followed a pattern similar to that which emerged with the total sample. The "Number of Concerns" appeared to be the most pr[redacted]ive variable and the visit was more likely to occur when the "Mother's Decision" indicated visit. However "Medication" was not found to be a statistically significant predictor.

The classification results using the three variables correctly classified 71% of the mothers in terms of need for a home visit. Of the group predicted to need or not need a home visit the number of true positives was 17 and the number of true negatives 18 resulting in sensitivity of the screen being 74% with a specificity of 69%.

TABLE 9

DISCRIMINANT ANALYSIS OF CAESARIAN SECTION
(n=49)

UNIVARIATE F-RATIO (with 1 and 47 degrees of freedom)		
	F-RATIO	SIGNIFICANCE LEVEL
NUMBER OF CONCERNS	9.15	0.004
MEDICATION	0.83	0.368
MOTHER'S DECISION	9.03	0.004
CHI-SQUARED 13.03	3 D.F.	SIGNIFICANCE 0.005

	CANONICAL DISCRIMINANT COEFFICIENTS	
	STANDARDIZED	UNSTANDARDIZED
NUMBER OF CONCERNS	- 0.67	- 0.21
MEDICATION	0.06	0.12
MOTHER'S DECISION	0.66	1.42
	(CONSTANT)	0.88

Since differences may be expected between a normal vaginal birth and the surgical procedure of a caesarian section, a stepwise analysis was performed on the caesarian section subgroup (with the 37 variables which had complete data) to determine if any other variables were predictive for the classification of "visit" and "no visit". These results indicated that the number of mother's concerns, concerns

regarding the mother's bowels, lochia, and family and friends support maximized the discriminate solution. The standardized canonical discriminant functions coefficients were as follows: -0.96 for Number of Concerns; 0.66 for bowels; 0.57 for lochia; and 0.58 for Family and Friends Support. With the influence of Mother's Decision and Medication removed an increased Number of Concerns appeared to be the most predictive variable. The more concerns that the mother expressed, the greater the chance that a home visit would be made. The chance of the mother being judged to need a home visit also could be considered to decrease when the mother had a small number of specific concerns, namely the mother's bowels, the vaginal flow and the mother's support she received from family and friends. Given these findings it is possible that when the mother receives a caesarian section the nurse reacted more to the number of concerns than to any specific concern. With this solution, the percent of the grouped cases correctly classified increased to 81.6%. The sensitivity remained at 74%; however, the specificity increased to 85%.

In contrast, the direct entry of the variables "Number of Concerns", "Medication" and "Mother's Decision" for the discriminant analysis of the 108 subjects whose infant sons had been circumcised demonstrated that all three variables remained predictive of the need for and no need for a home visit. That the order and direction of the weighted

variables remained consistent with the total sample of subjects is demonstrated by the standardized discriminant function coefficient of 0.66 for Mother's Decision, -0.57 for Number of Concerns and 0.30 for Medication. The percentage of "grouped" cases correctly classified was only 72%; however, this percentage remained unchanged when a further assessment was done using a stepwise analysis.

The same similarity existed with the larger subsample of 317 subjects who had responded to the open ended question regarding the mothers' own perceptions of how well they were progressing. The resulting standardized discriminant function coefficients of a weight of 0.76 for Mother's Decision, -0.51 for Number of Concerns and only 0.16 for Medication demonstrated that the mother's decision for the visit and the greater the number of concerns expressed by the mother contributed towards the decision for the need of the home visit. The pooled within-group correlations between the discriminating variables and the canonical discriminant function showed that the Mother's Decision had a strong positive relationship with a correlation value of 0.84, while Number of Concerns had a negative relationship of -0.62 followed by Medications demonstrating a weaker positive relationship of 0.25. There were 75% of the cases estimated to be correctly classified.

Crosstabulations

Crosstabulations were undertaken to further evaluate the joint distribution of the three variables that demonstrated the strongest predictive powers, namely "Number of Concerns", "Mother's Decision", and "Medication".

Initially the total range of concerns (0 to 18) were crosstabulated with the Nursing Decision. The evaluation of that distribution demonstrated that three distinct groupings emerged and those were 0 to 1 concern, 2 to 6 concerns and thirdly, 7 concerns and over. Consequently, these three groupings were used for further evaluation.

Table 10 shows the joint distribution of the Nursing Decision by the number of Mothers' Concerns (broken down by 0-1, 2-6 and 7+ concerns). The first number in each cell is the observed frequency, while the second number in brackets denotes the value that would be expected if the two variables in the table were statistically independent. The chi-square test result was 50.9 with 2 df ($P<.001$), or assuming ordinal data Spearman's rho was found to be -.38 also statistically significant.

For those mothers who reported 7 and over concerns, the assumption of independence under estimated the frequency of the number of subjects rated as needing a home visit and over estimated the number rated as not needing a visit. It is therefore likely that the number of concerns expressed by the

mother did have an influence on the nursing decision to visit or not to visit.

TABLE 10

CROSSTABULATION OF NURSING DECISION BY NUMBER OF CONCERNS

NURSING DECISION	NUMBER OF CONCERNS 0-1	2-6	7 AND OVER	
VISIT	19 (40.8)	96 (95.7)	53 (31.6)	168 48.6%
NO VISIT	65 (43.2)	101 (101.3)	12 (33.4)	178 51.4%
	84 24.3%	197 56.9%	65 18.8%	346 100.0%

χ^2 = 50.93 with 2df (P<.001)
Spearman's Rho= -0.38 (P<.001)

The crosstabulation of the "Nursing Decision" by "Mother's Decision" is illustrated in Table 11.

TABLE 11

CROSSTABULATION OF NURSING DECISION BY MOTHER'S DECISION

NURSING DECISION	MOTHER'S DECISION VISIT	NO VISIT	
VISIT	130 (87.4)	38 (80.6)	168 48.6%
NO VISIT	50 (92.6)	128 (85.4)	178 51.4%
	180 52.0%	166 48%	346 100.0%

χ^2 = 82.17 with 1 df, (P<.001)
χ^2 = 84.13 with 1 df, (P<.001) (before Yate's correction)
Spearman's Rho = 0.49 (P<.001)

The Nursing Decision defines the rows while the Mother's Decision defines the columns. Again the chi-square

analysis was performed; however, with these variables having the df=1 a Yates' correction was calculated for discontinuity. Both the adjusted and the non adjusted value have been provided in Table 11.

It is possible that the variable Number of Concerns is influenced by the variable Mother's Decision (or vice versa) and that these are not distinct variables. To explore this possibility a contingency table and chi-square analysis was performed on the nursing decision and the number of concerns while controlling for the mother's decision of her need or no need for the visit (Table 12).

In part 1, the number of concerns is given within the range of concerns for each mother who felt she needed a visit, classified as to the Nursing Decision. Similarly in part 2, those mothers who felt that a visit was not necessary were classified into the same range of concerns as to the Nursing Decision.

There were more mothers who felt that they needed a visit when they had 7 or more concerns than when the mothers indicated no visit was needed. Furthermore, more mothers who indicated a need for the visit were classified by the nurses as needing that same visit. A relationship exists between the nursing decision (to visit or not to visit) and the number of concerns expressed by the mother requesting a home visit. More no visits decisions were made than expected when the number of concerns was small, whereas a smaller number of

no visits were made when the number of concerns were large. When the mother's decision was for no visit, the nursing decision for a visit was greater than expected if there had been no relationship when the number of concerns was high, and lower than expected when the number of concerns was small.

TABLE 12

CROSSTABULATION OF NURSING DECISION BY NUMBER OF CONCERNS CONTROLLING FOR MOTHER'S DECISION

1. **MOTHER'S DECISION FOR HOME VISIT**

NURSING DECISION	NUMBER OF CONCERNS 0-1	2-6	7 AND OVER	
VISIT	12 (17.3)	74 (76.6)	44 (36.1)	130 72.2%
NO VISIT	12 (6.7)	32 (29.4)	6 (13.9)	50 27.8%
	24 13.3%	106 58.9%	50 27.8%	180 100.0%

χ^2 = 12.22 with 2 df (P<.002); Minimum E.F. of 6.7 and no cells with E.F.< 5. Spearman's Rho = -0.26 (P<002)

2. **MOTHER'S DECISION FOR NO HOME VISIT**

NURSING DECISION	NUMBER OF CONCERNS 0-1	2-6	7 AND OVER	
VISIT	7 (13.7)	22 (20.8)	9 (3.4)	38 22.9%
NO VISIT	53 (46.3)	69 (70.2)	6 (11.6)	128 77.1%
	60 36.1%	91 54.8%	15 9.0%	166 100.0%

χ^2 = 16.1 with 2 df (P<.001). Minimum E.F. of 3.4 and 1 of 6 (16.7%) cells with E.F.< 5.
Spearman's Rho = -0.29 (P<001).

Table 13 shows the crosstabulation of Nursing Decision by Number of Concerns controlling for Medication.

TABLE 13

CROSSTABULATION OF NURSING DECISION BY NUMBER OF CONCERNS CONTROLLING FOR MEDICATION

1. **ON MEDICATION**

NURSING DECISION	NUMBER OF CONCERNS 0-1	2-6	7 AND OVER	
VISIT	7 (8.2)	28 (32.4)	24 (18.4)	59 63.4%
NO VISIT	6 (4.8)	23 (18.6)	5 (10.6)	34 36.6%
	13 14%	51 54.8%	29 31.2%	93 100.0%

χ^2 = 6.79 with 2 df (P<.034). Minimum E.F. of 4.8;1 of 6 cells (16.7%) with E.F.< 5.
Spearman's Rho = -0.2 (P< .012)

2. **NOT ON MEDICATION**

NURSING DECISION	NUMBER OF CONCERNS 0-1	2-6	7 AND OVER	
VISIT	12 (30.6)	68 (62.9)	29 (15.5)	109 43.1%
NO VISIT	59 (40.4)	78 (83.1)	7 (20.5)	144 56.9%
	71 28.1%	146 57.7%	36 14.2%	253 100.0%

χ^2 = 41.19 with 2 df (P<.001). Minimum E.F. of 15.5. No cells with E.F.< 5.
Spearman's Rho = -.40 (P<001)

Part 1 of Table 13 included those subjects who reported taking some form of medication while in part 2 of the same table the data are from those mothers who reported that they

were not taking medications. By examination it would appear that the number of concerns still influenced the decision to visit or not to visit even when the subjects were on medications.

Finally crosstabulations were done to assess the Number of Concerns in relationship to the Nursing Decision while controlling for both Mother's Decision and Medication. The results are summarized in Table 14.

Part 1 includes those mothers who felt they needed a visit and were on medications. Part 2 classifies those mothers who did not feel that they needed a visit but they were taking medications. The third part shows those mothers who felt they needed a visit but were not on medications. The fourth and final part includes those mothers who did not feel that they needed a visit and were not taking any medications.

Given these four crosstabulations of Table 14 it would appear likely that when mothers feel that a visit is needed, they have indicated more concerns regardless of whether they are on medication or not. As mothers express more concerns they appear to feel that they are in need of a visit. Since the Chi-square is not significant when the mothers were on medication, it would appear that no relationship existed between the nursing decision to visit and not to visit and the number of concerns when the mother was on medication.

TABLE 14

CROSSTABULATIONS OF NURSING DECISION BY NUMBER OF CONCERNS CONTROLLING FOR BOTH MOTHER'S DECISION AND MEDICATION

1. **MOTHER'S DECISION VISIT AND ON MEDICATION**

NURSING DECISION	NUMBER OF CONCERNS 0-1	2-6	7 AND OVER	
VISIT	5(6)	20(21)	18(16)	43(75%)
NO VISIT	3(2)	8(7)	3(5)	14(25%)
	8(14%)	28(49%)	21(37%)	57(100%)

χ^2 = 2.16,2df (P < .339); Minimum E.F. 2 with 1 cell out of 6 (17%) E.F. < 5. Spearman's Rho = -0.19 (P < .076).

2. **MOTHER'S DECISION NO VISIT AND ON MEDICATION**

NURSING DECISION	NUMBER OF CONCERNS 0-1	2-6	7 AND OVER	
VISIT	2(2)	8(10)	6(4)	14(44%)
NO VISIT	3(3)	15(13)	2(4)	20(56%)
	5(13%)	23(64%)	8(22%)	36(100%)

χ^2 = 3.93,2df (P < .140); Minimum E.F. 2 with 4 cells out of 6 (67%) E.F. < 5. Spearman's Rho = -0.25 (P < .070).

3. **MOTHER'S DECISION VISIT AND NO MEDICATION**

NURSING DECISION	NUMBER OF CONCERNS 0-1	2-6	7 AND OVER	
VISIT	7(11)	54(55)	26(21)	87(71%)
NO VISIT	9(5)	24(23)	3(08)	36(29%)
	16(13%)	76(63%)	29(24%)	123(100%)

χ^2 = 10.73,3df (P < .005); Minimum E.F. 4.7 with 1 cell of 6 (17%) E.F. < 5. Spearman's Rho = -0.29 (P < .001).

4. **MOTHER'S DECISION NO VISIT AND NO MEDICATION**

NURSING DECISION	NUMBER OF CONCERNS 0-1	2-6	7 AND OVER	
VISIT	5(9)	14(12)	3(1)	22(17%)
NO VISIT	50(46)	54(56)	4(6)	108(83%)
	55(42%)	68(52%)	7(5%)	130(100%)

χ^2 = 6.40,2df (P < .040); Minimum E.F. 1.2 with 1 cell of 6 (17%) E.F. < 5. Spearman's Rho = -0.22 (P < .007).

For mothers requesting a visit and not on medication, the nursing decision was greater than expected for a low number of concerns and smaller than expected for a large number of concerns. Possibly the type of concern may be important since all concerns are not necessarily of equal importance.

However, given the small number of subjects classified into each of these groups one must exercise caution in arriving at interpretive conclusions.

Telephone Subsample

Comparison of Telephone Interview and Home Visit

The consistencies between the mothers' reported concerns by the telephone and by face to face interviews at the time of the home visit are reported on Table 15. The number of subjects who expressed any degree of concern (either "concern" or "very concerned") are itemized beside each applicable item in the questionnaire; associated percentages (of total telephone subgroup subjects) are indicated in brackets; the corresponding Chi-square value per item with the associated probability level for each Chi-square tested under the null is also given. The Chi-square using the 3X3 table with the responses of the mother on the telephone (no concern, concern, very concerned) and the mother on the home visit offers some evidence of the degree of the relationship between the two sets of responses.

TABLE 15

COMPARISON OF MOTHERS' RESPONSES FROM TELEPHONE AND HOME VISIT INTERVIEW (n=67)				
VARIABLES	PHONE	HOME	χ^2,df	SIG.
VAGINAL FLOW	16 (24%)	13 (19%)	55.19, 4df	p<.001
PERINEUM	10 (12%)	6 (9%)	18.80, 2df	p<.001
MOTHER'S BOWELS	12 (18%)	13 (19%)	42.77, 4df	p<.001
BREAST	24 (36%)	19 (28%)	34.25, 4df	p<.001
NUTRITION	17 (25%)	17 (25%)	31.72, 2df	p<.001
REST	28 (42%)	13 (19%)	65.01, 4df	p<.001
BREAST FEEDING	21 (31%)	13 (19%)	41.39, 4df	p<.001
BOTTLE FEEDING	11 (16%)	1 (2%)	46.73, 4df	p<.001
CORD	27 (40%)	22 (33%)	94.98, 4df	p<.001
WET DIAPERS	3 (4%)	2 (3%)	23.97,1df* 43.98,1df	p<.001 p<.001
INFANT'S BOWELS	21 (31%)	20 (30%)	60.86, 4df	p<.001
SKIN	26 (38%)	23 (34%)	89.09, 4df	p<.001
SLEEPING/WAKING	20 (30%)	13 (19%)	53.93, 4df	p<.001
CRYING	13 (19%)	11 (16%)	44.28, 2df	p<.001
IMMUNIZATION	22 (33%)	15 (22%)	31.89, 4df	p<.001
EMOTIONS	14 (21%)	8 (12%)	12.59, 1df* 16.09, 1df	p<.001 p<.001
DEMANDS	30 (45%)	19 (28%)	58.35, 4df	p<.001
SIBLINGS	26 (39%)	13 (19%)	59.65, 4df	p<.001
HUSBAND'S SUPPORT	2 (3%)	1 (2%)	0.000, 1df* 0.031, 1df	p≤1.00 p≤.86
FAMILY/FRIENDS	8 (12%)	5 (7%)	14.20, 2df	p<.001

* before Yates' correction

The Chi-square value per item for the two interviews were all significantly significant except for husbands

support denoting that the responses for all but the latter variable were related. The apparent lack of consistency from the variable husband's support disappears when one considers the small numbers reporting a concern when only 2 mothers reported such concerns on the telephone and only one on the home visit interviews. It should be noted, however, that wives may be reluctant to express such problems when they are interviewed by telephone or on a home visit.

Inconsistent responses regarding caesarian sections and circumcisions of their infants produced unequal "n's", thus preventing meaningful statistical computations of consistency for these latter two variables. The telephone interview usually elicited as many or more concerns (for almost all items). The variable "Demands" (demands of the infant, family and household) accounted for the largest number of mothers (45%) who specified any one item as a concern during the telephone interview. However, on the home visit interview, concern regarding the infant's cord was the most frequent concern described.

The number of concerns per subject ranged from 0-13 when they were interviewed by telephone and 0-12 when they were interviewed in the home. Slightly fewer mothers (7 mothers) reported 0 to 1 concerns when compared to 13 on the home visit; 42 mothers revealed that they had 2 to 6 concerns on their telephone interview compared to 38 subjects on the home visit interview. However, 22 mothers on the telephone

expressed having over 7 concerns while only 12 mothers reported over 7 concerns on the home visit.

The responses regarding the variable medication were very similar when comparing the telephone interview to the home visit interview; 14 mothers on the telephone interview stated that they were on medication and 16 mothers stated that they were on medication during the home visit interview. The mothers decision for the need for a home visit only varied slightly from 41 mothers stating that they needed a home visit when interviewed by telephone compared to 38 expressed the same need on the home visit.

Two discriminant solutions were computed for the 67 subjects who were also interviewed on the telephone, using the three variables (Mother's Decision, Number of Concerns and Medication) which were demonstrated to maximize the discriminate analysis for the total subject group: (1) for data extracted from the telephone interview; and (2) for data extracted from the home visit for only those subjects included in the subsample. The dependent variable in the subgroup analyses remained to be the nursing decision as to whether a visit was needed or whether the visit was not needed (visit or no visit).

The univariate F-ratios and the significance level of these ratios for the variables, Number of Concerns, Mother's Decision and Medication as derived from both the telephone and home visit interviews are outlined in Table 16). As

would be desired all three predictors remained statistically significant (and expected under random selection) when data extracted from the home visit were analyzed. For the data extracted from the telephone interview, "medication" proved to be statistically nonsignificant (though one must keep in mind the significant reduction in statistical power that was associated with this subsample of only 67 cases). However the home visit responses from the subjects in the 67 randomly selected subgroup demonstrated that the other two variables had a possible effect. However, unlike the results in the total group of 346 subjects and the results with the telephone data from the 67 subgroup subjects, Number of Concerns produced the highest ratio of the between to within group variation for the when the interview was undertaken on the home visit for the 67 subjects in the subgroup.

TABLE 16

UNIVARIATE F-RATIO WITH 1 AND 65 D.F.
TELEPHONE AND HOME VISIT INTERVIEW

VARIABLES	TELEPHONE		HOME VISIT	
	F-RATIO	SIG.	F-RATIO	SIG
NUMBER OF CONCERNS	13.89	0.000	19.19	0.000
MEDICATION	3.08	0.084	5.18	0.026
MOTHER'S DECISION	15.67	0.000	17.93	0.000

When the interview occurred in the home the effect of Medication was negligible with a small weight value of only 0.15. The small number of subjects who reported taking

medication when interviewed may bias this conclusion. Only 14 reported taking medications on the telephone interview and 16 during the home visit interview. However, if the small number taking medications was instrumental in affecting the outcome, one would assume the telephone interview findings would have showed as small a predictive weight as did the home visit.

Medication consistently demonstrated a lower weight in the predictive equation. The weights within the analysis attributed to the other 2 variables indicated that the Number of Concerns expressed on the telephone had a slightly lower weight in the equation than when the interview occurred at the home visit. There was little difference in the degree of the weight attributed to the variable Mother's Decision when the mother was interviewed on the telephone and at the home visit. Thus when the Mother's Decision is for a visit and when the Number of Concerns increase the likelihood that the visit is required increases.

To provide additional information to help make the weighting system more meaningful, the means for the 2 groups, "visit" and "no visit" on which the above univariate tests were computed are provided in Table 17. As demonstrated the "visit" group had the higher mean for Number of Concerns for both the telephone and the home visit interview, while Medication and Mother's Decision had the higher means for the "no visit" groups.

TABLE 17

GROUP MEANS TELEPHONE AND HOME VISIT INTERVIEW (n=67)				
VARIABLES	TELEPHONE		HOME VISIT	
	VISIT	NO VISIT	VISIT	NO VISIT
NUMBER OF CONCERNS	6.91	3.94	5.71	2.76
MEDICATION	1.71	1.88	1.65	1.88
MOTHER'S DECISION	1.18	1.61	1.21	1.67

The standardized canonical discriminant function coefficients for the variables entered in the analysis for the subgroup on the home visit and on the telephone are provided in Table 18.

TABLE 18

STANDARDIZED CANONICAL DISCRIMINANT FUNCTION COEFFICIENTS FOR TELEPHONE AND HOME VISIT INTERVIEW ON SUBGROUP (n=67)		
VARIABLES	TELEPHONE	HOME VISIT
NUMBER OF CONCERNS	-0.62	-0.70
MEDICATION	0.30	0.15
MOTHER'S DECISION	0.71	0.69

When the subjects are interviewed on the telephone, the pooled within group correlations between the discriminant variables and the canonical discriminant function are -0.66 for Number of Concerns, 0.70 for Mother's Decision and 0.31 for Medication. In comparison, when the subjects were

interviewed on the home visit these within group correlations demonstrated that there was very little difference in the degree of the relationship when the mother was interviewed on the telephone or on the home visit. Thus the Mothers Decision and Number of Concerns both proved to be related to the composite formed by all the weights given in Table 18. The variable medication continues to have a smaller impact on such an outcome. In addition the weights indicate that the Number of Concerns and the Mother's Decision are the most important predictors for the home visit (as reflected by the F tests).

The number of subjects in the subsample who were considered to need a home visit was 34 while 33 mothers from the same subsample were deemed not to require a visit by the public health nurses after the completion of the home visit assessment. Following a direct entry analysis, the Chi-square value for the Canonical discriminatory function were 30.52 with 3 D.F. and a significance level of <0.001 for the analysis of the responses from the telephone interview. By using the same direct entry method on the replies from the home visit interview on the same subjects, the Chi-square value for the Canonical discriminant function was 25.43 with 3 D.F. and a significance level of <0.001.

Tables 19 and 20 illustrate the classification results for the telephone interview and the home visit interview. These grouped classifications show similar results. If one

were using the designated variables, mother's decision, number of concerns and medication, 5 (15.7%) of the mothers who were considered to need a home visit by the public health nurse would not be designated for a home visit if the interview took place on the telephone. In comparison, 6 (17.6%) of the subjects would be classified as needing the visit by the nurse but not predicted to need it by discriminate solution when the interview was accomplished in the home. In analogous fashion, another 9 (27.3%) would be predicted to need a visit but when the public health nurse had considered it unnecessary (if the interviews were undertaken on the telephone). Correspondingly when interviewed on the home visit, 8 (24.2%) subjects would be predicted to need the visit but the nurse would not be in agreement with the prediction. Thus the percentage of groups classified correctly overall was 79.1% for both the telephone and the home visit.

TABLE 19

CLASSIFICATION RESULTS FOR TELEPHONE SUBSAMPLE: TELEPHONE INTERVIEW

		PREDICTED GROUP	
NURSING DECISION	# CASES	HOME VISIT	NO HOME VISIT
HOME VISIT	34	29 (85.5%)	5 (15.7%)
NO HOME VISIT	33	9 (27.3%)	24 (72.7%)

TABLE 20

CLASSIFICATION RESULTS FOR TELEPHONE SUBGROUP: HOME VISIT INTERVIEW

NURSING DECISION	# CASES	PREDICTED GROUP HOME VISIT	PREDICTED GROUP NO HOME VISIT
HOME VISIT	34	28 (82.4%)	6 (17.6%)
NO HOME VISIT	33	8 (24.2%)	25 (75.8%)

The overall accuracy is, as usual, better understood in referencing the specificity, sensitivity and positive and negative values (Table 21).

TABLE 21

PREDICTIVE ACCURACY OF SCREEN (HOME VISIT OR NO HOME VISIT)

MEASURE	TELEPHONE	HOME VISIT
Sensitivity	85.3%	82.4%
Specificity	72.7%	75.8%
[1] P.P.V.	76.3%	77.8%
[2] N.P.V.	82.8%	75.8%

[1] P.P.V.: positive predictive value
[2] N.P.V.: negative predictive value

If the three variables, Number of Concerns, Mothers Decision and Medications, were used on the telephone for predicting the need for a home visit, the screening tool would pick up 85% of the true positive or 85% of those who the nurses would classify as requiring a home visit (assuming of course that the nurses decision was the legitimate

criterion). The same predictors would determine 73% of those who truly did not need a visit (true negatives) given the same assumptions.

Crosstabulations for Telephone Subgroup

An analysis of the data from the telephone interview comparing the nurses decision and the number of concerns showed that the mother was more likely to receive a home visit when there were 7 and more concerns while no subjects were judged to need a visit when there where 0 to 1 concern. (Similarly, the parallel data from the home visit for these same subjects resulted in the decision to visit being more likely to occur with 7 and more concerns). However, in both interviews, the majority of subjects had 2 to 6 concerns, and the number of subjects who fitted into this category were evenly split between those who did need the visit and those who did not need the visit.

A contrast of the nurses decision regarding the need of the home visit with the mothers, when the interview was conducted by telephone, showed that 82% of the subjects who were judged by the nurse to need a visit were also considered to need that visit by the mothers themselves. Conversely, 61% of the subjects were determined not to need that visit by both the nurse group and the mother group. The same analyses undertaken with home visit data demonstrated that 79% of those who truly needed a visit were so estimated by the mothers themselves. Sixty-six percent of the mothers who

deemed the visit not necessary were similarly judged by the nurse not to need that visit. Thus if one were to use only the mothers decision of her own need, this variable would be 82% accurate in determining those who truly needed that visit.

To determine if the an experienced "expert" public health nurse who did not administer the questionnaire but merely reviewed the responses of the telephone interview could independently assess the need or no need for a home visit an additional crosstabulation was undertaken comparing the criterion with this individual nurse's decision. The results demonstrated that this nurse without the benefit of a personal interaction predicted that 74% of those subjects who truly needed a home visit (according to the criterion) as needing that home visit and 70% of those who did not need a home visit as not needing that visit. Of those that the "expert" nurse predicted needing a home visit 71% would need the visit and of those the "expert" predicted as not needing a visit 72% would not need that visit. Since the "expert" would miss 26% of those who need a home visit and visit 29% of those who did not need a visit the value of assessing the need for a home visit based solely on responses to the items in the MCA, the use of this tool without a personal interaction would be open to debate. However, such results do provide some insight into the predictive power of the instrument in its ability to predict the majority of those

mothers who truly need a home visit without added dimension of the mother-nurse interaction.

Summary of the Findings

The findings of this study indicated that the decision of the mother and the number of concerns expressed by the mother appear to be the most predictive variables of those variables which were included in this study for determining the need of a home visit provided by the public health nurse for the multiparous mother who has not been referred by the NICU or by the hospital liaison nurse and who can comprehend the English language. The mothers indication of being on medication also presented itself to be a predictor although not as strong a predictor as did the two afore mentioned variables. The results on the telephone appear to indicate that the mothers responses on the telephone are acceptably consistent with those responses extracted on the home visit.

Chapter 5

Summary Conclusions

Summary

Main group:

The convenience sampling technique used could have biased the study. A random selection from an expanded study population of one or more years would have been a preferable method for selection. Given this investigator's time limitations, the convenience sampling selection from the total population of births during the study period was the only reasonable cost effective method.

Most biographic and demographic characteristics of the sample of subjects of 346 multiparous mothers (who were eligible for inclusion) did not demonstrate any predictive power in the discriminant analyses undertaken. One could reasonably postulate that the days postpartum, the age of the mother, or the number of children she had would influence the mother's need for a home visit by a public health nurse. Such postulates were not supported in this study. Since, however, the subjects in the study received their home visits on an average of 14 days postpartum, any impact of the length of time after discharge may have been negated; inclusion of earlier contacts (within 1 to 2 days after discharge) may have produced different or an increased pattern or number of concerns pertaining to the mother's health or to that of

their infants. Only 16% of the mothers had more than two children. Thus influences resulting from large family sizes would not have been easily manifested here. Finally, the majority of mothers were between the ages of 20 to 35 years modifying any influences produced by younger or older age ranges. The consistency of the characteristics of the randomly selected telephone subgroup (from the total sample from which it was drawn) has similar interpretive problems with respect to these potential biases.

Although the participating public health nurses who conducted the home visits were not randomly drawn from a theoretical population of all public health nurses, all nurses who normally provided postpartum home visits in Edmonton and who were not on holidays during the study period were involved in this study. Moreover, the public health nurses who interviewed the mothers by telephone were randomly selected by drawing one from each health centre. The level of experience of the nursing group, exerted no apparent effect on the outcome of the decision to visit or not to visit.

The contrast of the mothers' response to the MCA and the parallel items in the PHA showed that a statistically positive relationship existed between each item of concern. If one assumes that expertise regarding the normal physiological changes that transpire during the puerperium equips them with additional information by which they can

determine deviations from the normal process, one would not have expected that the nurse and mother should consistently agree that a concern represents a need. The mothers' concerns during this period of adjustment may only require verbal reassurance about normal physiological changes. However, since the obtained results were consistently greater than the expected frequency value for all the variables, one may conclude that the nurses' responses and the mothers' responses were closely related. The decisions made by the public health nurses are likely dependent upon the responses expressed by the mother, and if this assumption is true, the results are consistent with good public health nursing practice in which public health nurses respond to the needs of their clients.

Obviously the sample of items included in the discriminant analyses were, at best, representative of the universe of such items pertaining to the physiological and psychosocial changes that a mother undergoes during the postpartum period. Variables not included in the analysis could have produced more predictive power. If one used all the items in the questionnaire, 80% of the mothers could be accurately classified for need of home visit (assuming that the public health nurses were correct in their grouping of need or no need of a home visit).

The optimal discriminant solution resulted in only Mother's Decision, Number of Concerns and Medication being

identified as statistically important. The standardized canonical discriminant function coefficients for the discriminating variables revealed that Mother's Decision followed by Number of Concerns have the largest weight factor for the nursing decision for a home visit with Medication having a fairly weak contribution to the classification. When these three variables were used in the analysis the percent of grouped cases correctly classified was 75.5% which was 4.9% less than with the inclusion of all items.

The use of these variables as a screening measure would predict those who need a visit 81% of the time and those who do not need a visit 71% of the time. Although the screen would be fairly sensitive to those needing a visit, 29% of mothers who would not need a home visit would possibly receive such a visit (an error that would be clinically safe, but financially inefficient). On the other hand approximately 19% of the mothers who should actually be visited would not receive this service. The prospect of not providing services to one in every five who need such service constitutes an ethical and clinical quandary.

Since a concern would lie with the above 32 individuals who would be classified as needing a home visit by the nurse but predicted as not requiring such a visit, some note of their characteristics was warranted (refer to page 44). Several subjects included in this category had infants which required a nursing assessment of skin colour, the umbilical

cord, inspection of a circumcision and other physical problems. Other subjects had health care problems pertaining to their own health. In the majority of these cases there was some evident degree of a health problem or a need for information about health services, resources available and/or the normal puerperium adjustment and, with all but two subjects, the mothers reported conditions which required further assessment. In 30 of the 32 cases, the mothers discussed concerns which may have led a nurse to decide a home visit was indeed warranted or at least led to an invitation for the mother to be seen at the health centre. In practice, if such a screen were implemented, only 1% of those who need a visit would not receive the help and assistance that they would need due to an incongruency of the responses and/or concerns which may only be evident on a face to face interview.

The mother's decision for the need or no need of a home visit and the number of concerns (especially when 7 or more) expressed by the mother consistently demonstrated that they were predictive of the need or no need for a home visit. It was apparent that medication was not a particularly strong predictor. If the infants had a circumcision and if the mothers responded to the open ended question, the results remain similar to those results produced when the data from the total group was analyzed. When the study was replicated

in the randomly selected telephone subgroup these findings were substantiated.

The results from the small subgroup of 47 subjects who had a caesarian section also fit with the above evidence. A stepwise analysis demonstrated that the number of concerns, mother's bowels, lochia and the support received from family and friends were also predictors for this subgroup. With the influence of Mothers Decision and Medication reduced, the Number of Concerns accounted for the largest portion of the Nursing Decision for a home visit and the other variables in the stepwise solution demonstrating that the nursing decision with this small sample was made more by the number of concerns. While the small sample size of only 47 subjects in these subanalyses may have distorted the results, it would seem prudent for a nurse who is assessing the health of the mother and infant over the telephone to take these unique findings concerning the types of concerns under close advisement.

The crosstabulation of predicted and nurse criterion demonstrated that if the mother's decision was used alone as a predictor for the need of a home visit the screen had a sensitivity of 77% and a specificity of 71%; the proportion of those predicted as needing a home visit who were truly positives would be 77% and the percentage predicted negatives that were truly negative is 81%. The comparison of the findings from the two foregoing methods of analyses exhibited

that the mother's decision remains the strongest predictor. The number of concerns (2 or more) appeared to influence the outcome only when the mother indicated that a home visit is necessary. In contrast, if the mother responded to taking medication there was no apparent difference in the influence of the number of concerns when compared to the mother not taking any medications. Therefore, the findings that the mother's decision in respect to the need for a home visit, the number of concerns and medication are influencing factors for determining the "true need" for a postpartum home visit were confirmed.

Telephone Subgroup:

The mothers when interviewed on the telephone did not consistently provide the same responses to each item as when they were interviewed in the home. More mothers reported concerns per item on the telephone than in the home. These differences may possibly be attributed to several factors. Possibly the mothers may have been more comfortable in discussing problems on the telephone. Although the interview in the home was designed to have been within a specified time frame, the public health nurses completing the visit may have violated this condition. Also, it is feasible that the mother's concerns may have been addressed on the telephone by the interviewer despite the stipulation that this should be avoided. Conceivably, mothers may presume that the nurse during the home visit will ascertain potential problems

reducing the need for the mother to voice her own concerns. Finally, it is reasonable to assume that the mere mention of types of concerns may have alleviated the mothers concerns, thereby reducing the number of such concerns.

The findings from the analysis of the data from the telephone interview using the three variables, mother's decision, number of concerns and medication was congruent with the analysis of the home visit interview data for the subgroup. Similarly, the predictive accuracy of using these variables as a screen on the telephone was reasonably close to the results from the home visit interview.

The validity of the instrument was further assessed by using the independent expert public health nurse to review the responses from the telephone interview. The findings from this examination demonstrated a nurse could in fact make an assessment on the basis of the information on the questionnaire obtained for her by another interviewer; however, the decision to visit or not to visit made by the "expert" was found to be less predictive of true need than the decision made by the mother.

Conclusions

For the subjects in the total group and in the telephone subgroup, the mothers' stated need for a home visit, evidence of seven or more concerns and the mother presently receiving medication appeared to be a clear indication for need of a

home visit. If only these variables were to be used for deciding who is in need of a home visit, visits would be provided to approximately 54% of the eligible multiparous mothers (i.e., those who were not referred to the health centre by the hospital liaison nurse or by the neonatal intensive care units and who could comprehend English). Following the telephone interview, an additional number may be judged to need a home visit due to some extraneous circumstances that these three variables failed to identify as in need. Similarly there may be some mothers who stated initially that they need a home visit, but after the telephone interview may feel that her needs were now met and that a visit is no longer required. Obviously, nursing judgement even when using set criteria would need to be allowed to prevail.

Given the above, approximately 46% of the nursing time spent on visiting the "normal" multiparous mother could be reduced by using the telephone assessment screen. The time taken for a telephone interview would be considerably less than that to do a home visit. The resources saved could be channelled to other programs and more emphasis given to those who are most in need of further follow-up. Brouse (1988) and Mercer (1985) contend that the first trimester and motherhood is a gradual process; hence, those who required more intensive follow-up could benefit from further home visits and an increased concentration of time and resources.

For Edmonton, the local policy of visiting the total population of multiparous mothers must undergo a careful re-examination. Although the current literature does not always provide solid evidence regarding the effectiveness of the public health nursing home visit, the value of home visits to dysfunctional families is strong (Brodish et al, 1987; Olds et al, 1986). However, the need for conducting home visits to the total population is more open to debate. With the gradual reduction in the finances awarded for the provision of public health nursing services, there are stresses placed on the nursing personnel to provide the present or additional services combined with an ever increased workload. All activities must be closely examined. Concentrating on educational programs and parenting groups may be more beneficial for the majority of mothers of today than are home visits. Odds et al (1996) strongly recommended a comprehensive program which provides parent education and dedicates home visits to those most in need of such services. Hampson (1988) emphasized that the hospitals and community agencies must collaborate for the provision of the services that new mothers receive. She stressed that parent support groups combined with telephone support and home visits may be a solution to the problem of providing assistance for the mothers adaptation to parenthood. McConville (1989) and Davis et al (1988) also recommended the establishment of parent groups which would enable the parents to take

individual responsibility for the health of their child. Increased emphasis on parenting groups may maximize the utilization of the public health nurses time.

The importance of using the mothers' own decision to ascertain the need or no need of a home visit is supported in the literature. Muntz (1988) asserted that clients need to have a greater role in deciding if they need a home visit. She contended that it is essential that nurses do not impose their values on others when visiting and that the final decision to visit is really a value judgement. However, Muntz recognized that a home visit may be necessary for some mothers who do not recognize the need for such a visit. For those mothers, it is imperative that the nurse is explicit about the purpose and importance of the visit; thus, encouraging the mother to be open and receptive to the visit. This suggestion is compatible with the findings in this study that the mother's decision is an important factor for determining the need of a home visit.

The number of concerns a mother experiences is a logical predictor. No single concern included in the questionnaire appeared to be more predictive than another except in the individuals who had received a caesarian section. The physiological differences experienced during the entire delivery process may account for the dissimilarity of predictive variables in this subgroup. However, in all other groups analyzed the number of concerns appeared to be an

influencing factor for estimating which mothers need or do not need a home visit. This is supported by Brouse (1988) who found that the transition to motherhood was affected by a number of factors which appeared to be interactive and accumulative in nature.

The implementation of a telephone assessment would require that any potential effects resulting from such a course of action should be monitored. Any deviations in the attendance into clinic for immunization, the attendance for drop-in anthropometric measurements and the number of telephone calls for advice would need to be closely observed. An evaluative process would yield key information regarding the outcome of program change.

Nursing research for assessing the effect of public health nursing home visit intervention is urgently needed. A randomized study on those mothers who are predicted not to need the home visit would provide valuable insight on public health nursing intervention during the transitional period. The work initiated by Flager (1988) in the area of maternal role competence requires supplementary attention to define the most appropriate plans for nursing interventions directed towards the postpartum woman.

Since the findings did not demonstrate that there were any great differences between the responses of mothers to the home visit interview and the responses to the telephone interview, it would appear that the mothers are not reluctant

to discuss problems with the nurses on the telephone. However, a study undertaken by Illingsworth (1989) demonstrated that health visitors experienced several problems related to privacy during administration and truthfulness of the responses when using a postnatal questionnaire. Although the difficulties experienced by the health visitors cannot be generalized to using a questionnaire for routine assessment on the telephone similar findings may have occurred with a larger sample. Similarly, Selfi (1989) found that visits which had a high ratio of completing forms and asking questions produced a more bureaucratic style inhibiting the establishment of a supportive relationship. The usage of a questionnaire routinely on the telephone should be studied to assess if the supportive role of the nurse is impeded by using the screening tool.

Based on the findings of the study, it is this author's recommendation that a strategy be devised by public health nursing administrators to implement a telephone screening assessment of the multiparous mothers who have not been referred to the health centres by the NICU and the hospital liaison nurses and who understand sufficient English to interpret the questions asked on the telephone. An evaluative study must be built into the program. The mother's decision for the home visit, the number of concerns expressed by the mother and if the mother is taking

medications should be considered to be the most predictive factors with all mothers who have had a vaginal delivery. With those mothers who have had a caesarian section delivery, the mother's concerns regarding her bowels, lochia and her support system should be considered along with the number of concerns she expressed as indicators for the need for a visit. To minimize the risk of not visiting those mothers who were categorized as needing a visit by the nurse but not predicted as needing the visit, home visits or alternative arrangements to see the mother and infant must be available for those mothers: (1) who are new to the province or unaware of the Edmonton Board of Health services; (2) who request information about health topics; (3) who express difficulty with coping, sibling rivalry, insufficient support systems; (4) whose infants have a physical health problem (i.e., circumcision, umbilical cord, skin conditions) (5) who report maternal health problems (i.e., excessive lochia, mastitis) and (6) who the nurse considers to need public health nursing intervention.

The introduction of this program should include the development of a parental support system and ensure that a telephone contact system is firmly in place to provide assistance for mothers who may develop difficulties in their adjustment to motherhood.

In conclusion, a telephone interview of the postpartum multiparous mother can be used to predict which mothers are

in need of a home visit by a public health nurse. The consistencies in the findings with the total group and the telephone subgroup provided evidence that the tool could be used on the telephone. Furthermore, the congruity between the findings from the telephone interview data and the findings from the home interview data for the randomly selected telephone subgroup illustrated that the use of the tool by telephone did not influence the findings.

The use of this screening instrument for predicting the need of public health nursing home visits should be implemented for eligible multiparous mothers. The decision to use this screening instrument is necessarily a function of the tool's clinical accuracy and the potential economic benefit. If implemented, 81% of those mothers who need a home visit will be appropriately visited and the economic savings realized by this degree of clinical risk is a 46% reduction in the total number of home visits to the multiparous, English speaking, mothers who have not been referred to the health centre. As 19% of the nonvisited mothers would need a visit (therefore representing a future potential cost due to a lack of early assistance), the economic savings could be as low as only a 36% reduction in visits. In light of these degrees of clinical risks and economic savings, the introduction of these measures seems to warrant serious consideration of the potential impact on (i)

present nursing practice and (ii) the health of the mother and infant.

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APPENDIX A

MATERNAL CONCERNS ASSESSMENT

MATERNAL CONCERNS ASSESSMENT

OFFICE USE ONLY
I.D._____
H.C._____

SECTION I

1. Date when mother was interviewed: _____
   year month day

2. Date of baby's birth: _____
   year month day

3. Age of mother:
   - 19 AND UNDER ____
   - 20 TO 25 YEARS ____
   - 26 TO 30 YEARS ____
   - 31 TO 35 YEARS ____
   - 36 TO 40 YEARS ____
   - OVER 40 YEARS ____

4. Number of children: ____

5. Age(s) of other children: AGE
   ____
   ____
   ____
   ____
   ____

6. Has mother received previous visits from a public health nurse?
   YES ____
   NO ____
   If yes, when and where? _____

SECTION II

THE FOLLOWING QUESTIONS ON THE NEXT THREE PAGES ARE DIRECTED TOWARDS THE MOTHER BY THE INTERVIEWER. Please indicate the mother's level of concern or uneasiness, i.e., what she states she feels about her health or the health of her infant. If an item is not applicable for this client, check ( ) N/A.

NOT CONCERNED (NC): 1 CONCERNED (C): 2 VERY CONCERNED (VC): 3

HEALTH CONCERNS OF MOTHER:

	DEGREE OF CONCERN			
	NC	C	VC	N/A
1. What is your degree of concern with: your vaginal flow (eg., the amount, and colour, or return of your menses)? COMMENTS: _____	1	2	3	
2. What is your degree of concern with: the healing of your perineum (eg., stitches, haemorrhoids, pain, and/or discharge)? COMMENTS: _____	1	2	3	
3. What is your degree of concern with: your bowel activity (eg. constipation? COMMENTS: _____	1	2	3	
4. What is your degree of concern with: the healing of your incision from the caesarian section? COMMENTS: _____	1	2	3	___
5. What is your degree of concern with: the condition of the breast (eg., engorgement, letdown reflex, inverted nipples, or cracked nipples)? COMMENTS: _____	1	2	3	
6. What is your degree of concern with: your nutritional intake and your appetite? COMMENTS: _____	1	2	3	
7. What is your degree of concern with: the amount of sleep and rest you receive? COMMENTS: _____	1	2	3	

NOT CONCERNED (NC): 1 CONCERNED (C): 2 VERY CONCERNED (VC): 3

HEALTH OF THE INFANT:

	DEGREE OF CONCERN			
	NC	C	VC	N/A
1. What is your degree of concern with: breastfeeding your infant (eg., the length of feeding, the infant's sucking)? COMMENTS: _____	1	2	3	
2. What is your degree of concern with: bottle feeding your infant (eg., the preparation of formula, frequency of feeding)? COMMENTS: _____	1	2	3	
3. What is your degree of concern with: the healing of your baby's umbilical cord? COMMENTS: _____	1	2	3	
4. What is your degree of concern with: the healing of your baby's circumcision? COMMENTS: _____	1	2	3	
5. What is your degree of concern with: the number of wet diapers your baby has in 24 hours? COMMENTS: _____	1	2	3	
6. What is your degree of concern with: your infant's bowel movements (eg., the colour, frequency and or consistency of your baby's stools)? COMMENTS: _____	1	2	3	
7. What is your degree of concern with: the appearance of your infant's skin (eg., rashes, colour, and/or jaundice)? COMMENTS: _____	1	2	3	
8. What is your degree of concern with: the sleeping and waking patterns of your baby? COMMENTS: _____	1	2	3	
9. What is your degree of concern with: the crying patterns of your infant (eg., the frequency of crying, the ease on consoling, and/or irritability)? COMMENTS: _____	1	2	3	
10. What is your degree of concern with: the immunization your baby will receive? COMMENTS: _____	1	2	3	

NOT CONCERNED (NC): 1 CONCERNED (C): 2 VERY CONCERNED (VC): 3

FAMILY RELATIONSHIPS:

	DEGREE OF CONCERN			
	NC	C	VC	N/A
1. What is your degree of concern with: the emotional changes you may be experiencing?	1	2	3	
COMMENTS: _____				
2. What is your degree of concern with: meeting the demands of your household, your family and your new baby?	1	2	3	
COMMENTS: _____				
3. What is your degree of concern with: the reaction of the other children to the new baby?	1	2	3	
COMMENTS: _____				
4. What is your degree of concern with: your husband's help with the baby and your other children?	1	2	3	___
COMMENTS: _____				
5. What is your degree of concern with: the help and support you receive from family and/or relatives?	1	2	3	
COMMENTS: _____				

GENERAL INFORMATION:

1. Do you have any concerns about your health or the health of your infant which have not been mentioned?

_____

2. Are you on any medication? YES ___ NO ___

If yes, what medication? _____

3. Do you require any information on any of the following topics?

child safety (car seats, cribs etc.) ___
family planning, contraception ___
postpartum exercises ___
other ___

_____

4. How have things been for you since you have been home from hospital?

_____

_____

5. DO YOU FEEL THAT YOU NEEDED THIS HOME VISIT? YES ___ NO ___

APPENDIX B

PUBLIC HEALTH ASSESSMENT

PUBLIC HEALTH ASSESSMENT

OFFICE USE ONLY
I.D. _____
H.C. _____

ASSESSMENT CRITERIA FOR THE PUBLIC HEALTH NURSES

INSTRUCTIONS: Please do not complete this assessment form until your visit has been completed.

Please indicate if you have a concern for each of the following. If concerned (YES), if not (NO). For items in which you have circled YES, please indicate ( ) if a home visit is needed in regards to this particular area of concern.

Your nursing assessment of concern is to be based on the **EBH NURSING DIVISION GUIDELINES** highlight of which are included per item.

NO CONCERN: Within the normal limits according to EBH Guidelines.

CONCERN: There is a health problem or additional information required for that topic. For each topic some typical concerns are listed, but the nurse may recognize other deviations from normal.

PLEASE ENSURE THAT YOU HAVE COMPLETED THE LAST PAGE ON THE PUBLIC HEALTH NURSING ASSESSMENT.

MATERNAL HEALTH CONCERNS:

	CONCERNED		HOME VISIT INDICATED
1. **Lochia:** NO CONCERN: as expected according to the number of days postpartum; heavier than period in first 24 hours, bright red up to one week; gradually lessons over 2-3 weeks, colour red-brown; may last up to 6-8 weeks CONCERN: may increase with overactivity; refer: if lasts longer than 6-8 weeks; very heavy flow; passing of clots; and/or unusually odour	NO	YES	____
2. **Perineum:** NO CONCERN: episiotomy healed usually within 7 days CONCERN: haemorrhoids; excessive pain; infection (discharge); vaginal tears	NO	YES	____
3. **Bowels:** NO CONCERN: return to normal bowel CONCERN: constipated or diarrhoea; continued use of laxatives	NO	YES	____
4. **Caesarian section** (When applicable): NO CONCERN: incision dry and healing within 7-10 days CONCERN: infection (discharge); pain; gaping incision	NO	YES	____
5. **Breast:** NO CONCERN: lactation established or suppressed with no abnormal discomfort CONCERN: sore cracked nipples; inverted nipples; infection; engorgement; "letdown" reflex not established	NO	YES	____
6. **Nutrition and appetite:** NO CONCERN: nutritional intake adequate according to Canada's Food Guide CONCERN: nutrition inadequate	NO	YES	____
7. **Sleep and rest:** NO CONCERN: return to mother's normal sleeping pattern interrupted only by infant feeding and care every 3-6 hours CONCERN: interruptions due to pain or discomfort; anxiety or overtiredness	NO	YES	____

INFANT'S HEALTH:

	CONCERNED		HOME VISIT INDICATED
1. **Breast feeding** (if applicable): NO CONCERNS: feeding for appropriate length of time and at expected intervals for age and size (every 2-4 hours for 30-60 minutes). CONCERN: unusual frequency of feeding; difficulty with attachment to the breast; positioning	NO	YES	____
2. **Bottle feeding** (if applicable): NO CONCERN: feeding with appropriate amount of recommended infant formula at expected intervals (60-120 ml., q.3-4 hours) CONCERN: inappropriate formula (homogenized or 2%); inappropriate formula preparation; unusual frequency of amount	NO	YES	____
3. **Cord**: NO CONCERN: umbilical cord clean and dry (may detach anytime from 1-4 weeks) CONCERN: excessive moisture; infection (discharge and/or offensive odour); redness around base; bleeding	NO	YES	____
4. **Circumcision** (when applicable): NO CONCERN: dry and healing CONCERN: bleeding; discharge; unusual odour	NO	YES	____
5. **Urine**: NO CONCERN: 8-10 diapers in 24 hours CONCERN: few wet diapers; offensive odour; pain on voiding or poor stream	NO	YES	____
6. **Bowels**: NO CONCERN: normal according to the age; 1st day - black, sticky soft stool; 2-3 days - dark green soft stool; 3-5 days - changing green to yellow soft stool; 6 days - breast-fed: frequent brightmustard loose stools (may be after every feeding); bottle fed: pale yellow, pasty to firm stool (1-3 daily) CONCERN: constipation (dry, hard, infrequent stool); diarrhoea (frequent watery stool); presence of blood, mucous	NO	YES	____
7. **Skin**: NO CONCERN: clear, soft, smooth CONCERN: dryness; rashes; birthmarks; redness; jaundice; mottling; edema; infection	NO	YES	____
8. **Sleeping and waking patterns**: NO CONCERN: 2-5 hours between feedings (approximately 16 hours in 24 hours) CONCERN: prolonged wakeful periods with fussiness; frequent waking (more often than every 1½ hours); excessive sleeping (greater than 1 six hour stretch in 24 hours)	NO	YES	____
9. **Crying patterns**: NO CONCERN: readily consoled CONCERN: long periods of irritability	NO	YES	____
10. **Immunization**: NO CONCERN: understands what immunization required CONCERN: unusual concern about immunization; expresses reluctance to immunize child.	NO	YES	____

FAMILY RELATIONSHIPS:

	CONCERNED		HOME VISIT INDICATED
1. **Emotional changes:** NO CONCERN: expected response to postpartum changes; adjusting to postpartum period; depression may be present and last 1-2 days; most commonly occurs around 3-5 days CONCERN: delayed "postpartum blues"; if depression interferes with care of infant, refer	NO	YES	____
2. **Demands of household, family and new baby:** NO CONCERN: adjusts use of time and does not place herself under more pressure CONCERN: mother trying to accomplish everything becoming overtired; excessive tension and stress	NO	YES	____
3. **Adjustment of siblings:** NO CONCERN: siblings are involved and included in care of new family member; siblings received time and attention; normal adjustment to new baby CONCERN: siblings exhibit behaviourial problems	NO	YES	____
4. **Support and help from husband:** NO CONCERN: involvement in care of infant and other children CONCERN: no involvement with children or household; lack of emotional support	NO	YES	____
5. **Family and frierd support:** NO CONCERN: family and friends able to offer assistance when needed CONCERN: inadequate support system	NO	YES	____

GENERAL CONCERNS:

1. **Additional concerns:** Other (please specify) _____ _____	NO	YES	____
2. **Mother on medication:** NO CONCERN: mother not on any medication or if general health of mother seems to be good and that the mother is knowledgable, compliant and the infant is unaffected CONCERN: health status is not good; lack of information about her condition and medication	NO	YES	____
3. **Requires information about these topics:** NO CONCERN: no information required or question can be briefly explained CONCERN: additional information is required; lengthy discussion			
Child safety	NO	YES	____
Family planning	NO	YES	____
Postpartum exercises	NO	YES	____
Other (please specify) _____ _____	NO	YES	____

COMMENTS: (USE THIS SECTION FOR RECORDING PERTINENT INFORMATION FOR ANY OF THE PREVIOUS QUESTIONS AS YOU WOULD ROUTINELY RECORD IN THE NURSE'S NOTES):

PUBLIC HEALTH NURSING ASSESSMENT:

PLEASE CHECK THE APPROPRIATE BOX OR FILL IN THE ACCOMPANYING BOX: To be completed by the public health nurse.

1. If you were making a professional decision about the need for a home visit based on the information that you have both from the maternal concern assessment and the above questions, you would judge that:

   HOME VISIT WAS NECESSARY ____
   NO VISIT WAS NECESSARY ____

2. What factors other than those concerns which you have indicated influenced this decision? What indications lead you to this conclusion (eg., mother crying, mother- infant interaction etc.)?

3.a) According to your nursing assessment, do you consider that this family requires further follow-up from a public health nurse?

   YES ____
   NO ____

   b) If further follow-up is required, please indicate the reason: (use the GUIDELINES FOR USE OF NURSES JUDGEMENT ON WHETHER A NEW/BORN MOTHER REQUIRES FURTHER FOLLOW-UP.

   a) emotional attachment of parent(s) to infant ____
   b) health of mother ____
   c) health of infant ____
   d) environment of home ____
   e) support system ____

4. How many years experience do you have?

   LESS THAN TWO YEARS ____
   TWO TO FIVE YEARS ____
   FIVE TO TEN YEARS ____
   OVER TEN YEARS ____

5. Do you have any additional comments? (If additional space is required, please use the other side of this page.)

APPENDIX C

PROTOCOL FOR PUBLIC HEALTH NURSES

APPENDIX C1: PROTOCOL PROCEDURE

1. Exclusion Criteria:
   - 1.1 Primiparas
   - 1.2 Referrals made by the Hospital Liaison Nurses and Neonatal Intensive Care Units
   - 1.3 Any family who does not have a telephone
   - 1.4 Anyone who cannot speak English

2. Contact the mother to arrange for a home visit:
   - 2.1 Confirm that the mother is a multipara.
   - 2.2. Inform the mother about the project. Refer to the attached sheet INFORMATION FOR THE MOTHER. Providing standardized information will ensure that the mother is fully informed. If this mother is to be called by the Telephone Interviewer please ensure that the mother is fully apprised that she will receive a telephone interview as well.
   - 2.3. Obtain a telephone consent.
   - 2.4 Confirm time and date for the home visit. If applicable, contact the Independent Investigator to inform her about the time and date of the appointment so that the telephone interview can be done prior to the home visit.
   - 2.5. Inform the Regional Supervisor or her designate if you identified any subjects as being excluded for any of the above reasons.

3. Home visit the mother:
   - 3.1 Explain the questionnaire format and the way in which the questions will be asked. (See attached ADMINISTRATION OF QUESTIONNAIRE: INSTRUCTIONS FOR MOTHER).
   - 3.2 Ask the mother each question. It is important that the mother rates her own level of concern per item.Please complete the entire first page (SECTION I). This information is required for research purposes. **Only after the mother indicated the degree of concern she is experiencing for an item**, should you obtain further information and discuss and item.
   - 3.3 Record your own assessment of the health of the mother and/or infant for each item on the PUBLIC HEALTH ASSESSMENT. Use the EBH Guidelines to determine your rating. Indicate your professional opinion about the need for the home for each item and for your overall judgement of the need or no need for a home visit. Use the mother's expression of her concerns as well as your own assessment of the health status in your decision making. If your

overall decision was made due to considerations of factors (eg., mother crying, inappropriate comments, mother-infant interaction) not included in an temized breakdown of concerns, please provide the reason.
* The information you provide in this section is important for developing the criteria.

4. Return the questionnaire to your infant and preschool nurse.

If you have any questions, please telephone me (Lee Smith) at 476-6503.

THANK YOU FOR PARTICIPATING IN THIS STUDY!

APPENDIX C2

INFORMATION FOR THE MOTHER

The following information should be given to the mother when she is telephoned for the appointment:

As you are probably aware public health nurses from the Edmonton Board of Health visit mother with new babies. We are interested in helping new mothers adjust to the new baby and to help mother with health concerns they may have about either themselves or their infants, However, all mothers may not require home visits from the public health nurse. These mothers may only require a brief telephone call to answer questions and information about how to get help if she develops any concerns about her own health and the health of her infant.

Lee Smith, a Regional Supervisor with the Board of Health, who is currently taking a masters degree in Health Services Administration at the University of Alberta, is undertaking a research project to determine if a telephone interview could be used with some mothers who have had more than one baby. She developed a questionnaire on maternal concerns. Mothers who have had more than one child are being requested to respond to the questions in order to assess the adequacy of the questionnaire in determining whether or not a mother needs home visit.

If you agree to participate, (include one of the following statements):

A. **FOR PARTICIPANTS RECEIVING THE TELEPHONE INTERVIEW**: Your involvement would consist of a telephone interview from Ms. _____, another public health nurse, which would take 15 to 20 minutes followed by a home visit from me. A routine home visit usually takes about 30-40 minutes and the questionnaire may increase the time by 10 minutes. The same questionnaire will be administered on the telephone and on the home visit. The questionnaire deals with concerns that the postpartum mothers may have about their own health or the health of their infant and are topics frequently discussed on home visits.

OR

B. **FOR THE OTHER PARTICIPANTS:**
Your involvement would consist of answering the questions on the home visit. A routine home visit usually takes about 30-40 minutes and the questionnaire may increase the time by 10 minutes. The questionnaire deals with concerns that postpartum mothers may have regarding their own health or the health of their infants and are topics frequently discussed on home visits.

For the purpose of this study, your name will not be associated with any data collected and it will not be possible to identify any one individual.

If you do not wish to participate, you will still receive the usual service and a home visit. Also, you may discontinue the questionnaire interview at any time and this will not influence the services that you receive.

Finally, if you agree to participate, I will require a telephone consent. Do you agree to take part in this study?

YES NO

(The agreement can be affirmed at the beginning of the home visit or on the telephone interview of the mother wishes to consider the request).

Confirm the time and date for the home visit.

APPENDIX C3

QUESTIONNAIRE FOR MATERNAL CONCERN ASSESSMENT

INSTRUCTIONS:

Please explain the following formatting of this questionnaire to the mother (you may read this or paraphrase this information).

SECTION I:

The first few questions are about topics such ad the number of children in the family and their ages.

SECTION II:

These questions deal with the concerns you may have about your health, the health of your baby. I will ask you after each question to tell ME IF YOU ARE VERY CONCERNED, CONCERNED, OR NOT CONCERNED. (A concern is a problem, worry or anxious feeling that you may have about each topic).

For each question, I will ask you what is you degree of concern with a topic. Please tell me if you are bot concerned, concerned, or very concerned. Please stop me for clarification if you do not understand the question.

Example: What is your degree of concern with the healing of your baby's umbilical cord? You will then state that you are not concerned, concerned, or very concerned about how the umbilical cord is healing.

The final questions are open-ended, designed to collect general information about your health and the health of your infant.

Also, please ensure that all questions are asked of each participating mother by you on the home visit.

APPENDIX D

OFFICE USE ONLY
I.D. _____
H.C. _____

TELEPHONE CONSENT

Title of Research Project:
PUBLIC HEALTH NURSING TELEPHONE ASSESSMENT: INSTRUMENT DEVELOPMENT

Investigator: Eluned (Lee) Smith

Name of Mother: _____

Date of Initial Telephone Call: _____
year month day

CHECK IN THE APPROPRIATE BOX IF THE EXPLANATION OF THE STUDY MADE TO THE MOTHER BY THE NURSE INCLUDED (as included in Information to the Mother):

Purpose of study: _____
Brief explanation of content of questionnaire: _____
Time involvement: _____
Confidentiality of information: _____
That the subject can discontinue interview at any time: _____
Refusal to participate will not influence services the client receives: _____

Mother agreed to participate: YES _____

Date mother agreed to participate: _____
year month day

_____
Public Health Nurse's Signature